VOL. LXXXV PART SEVEN

JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

JULY 1960

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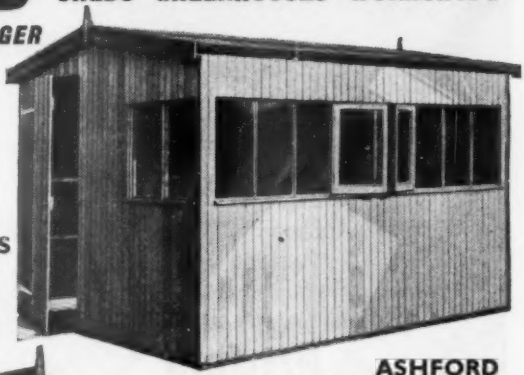

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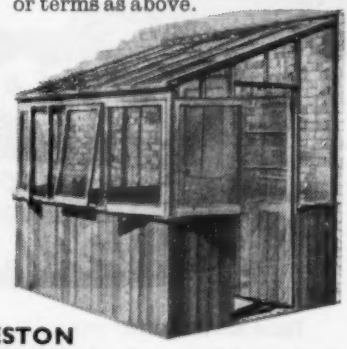

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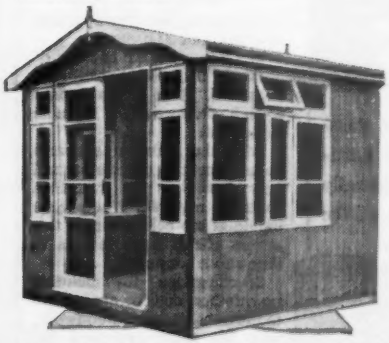

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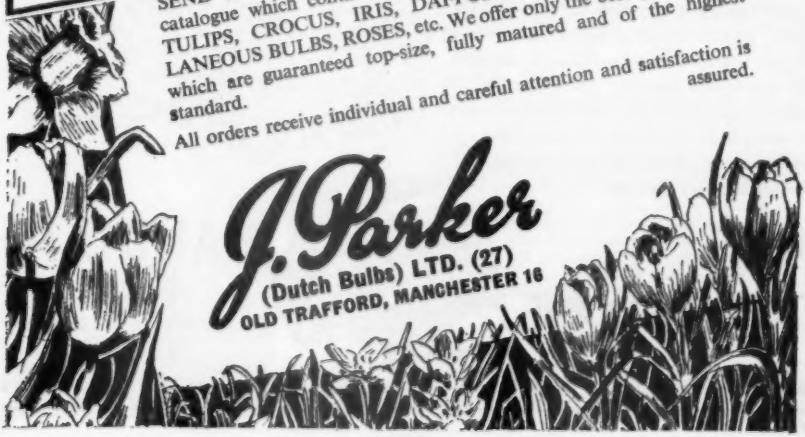

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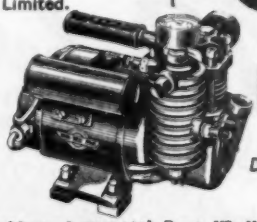

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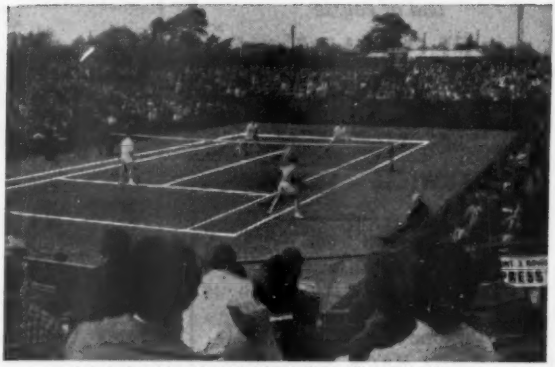

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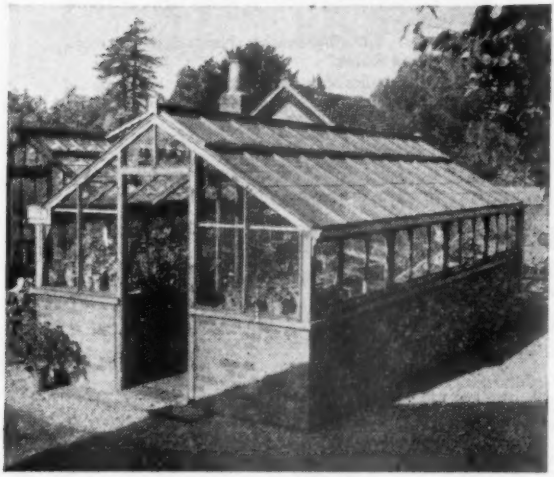

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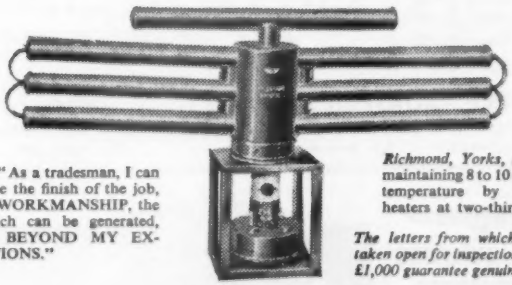

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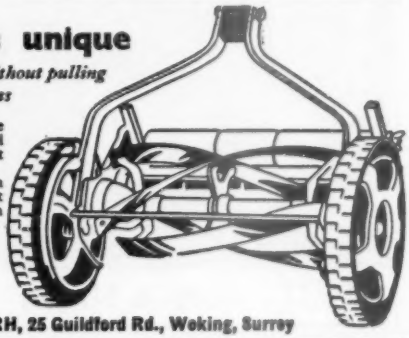

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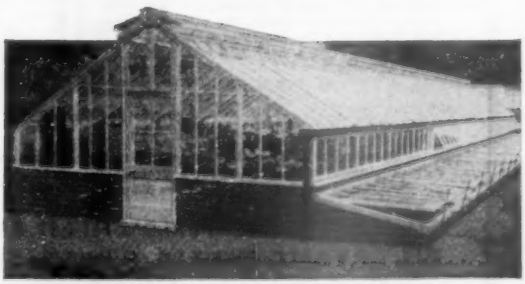

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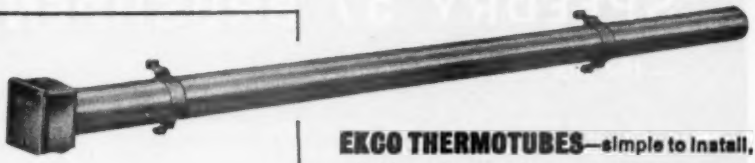

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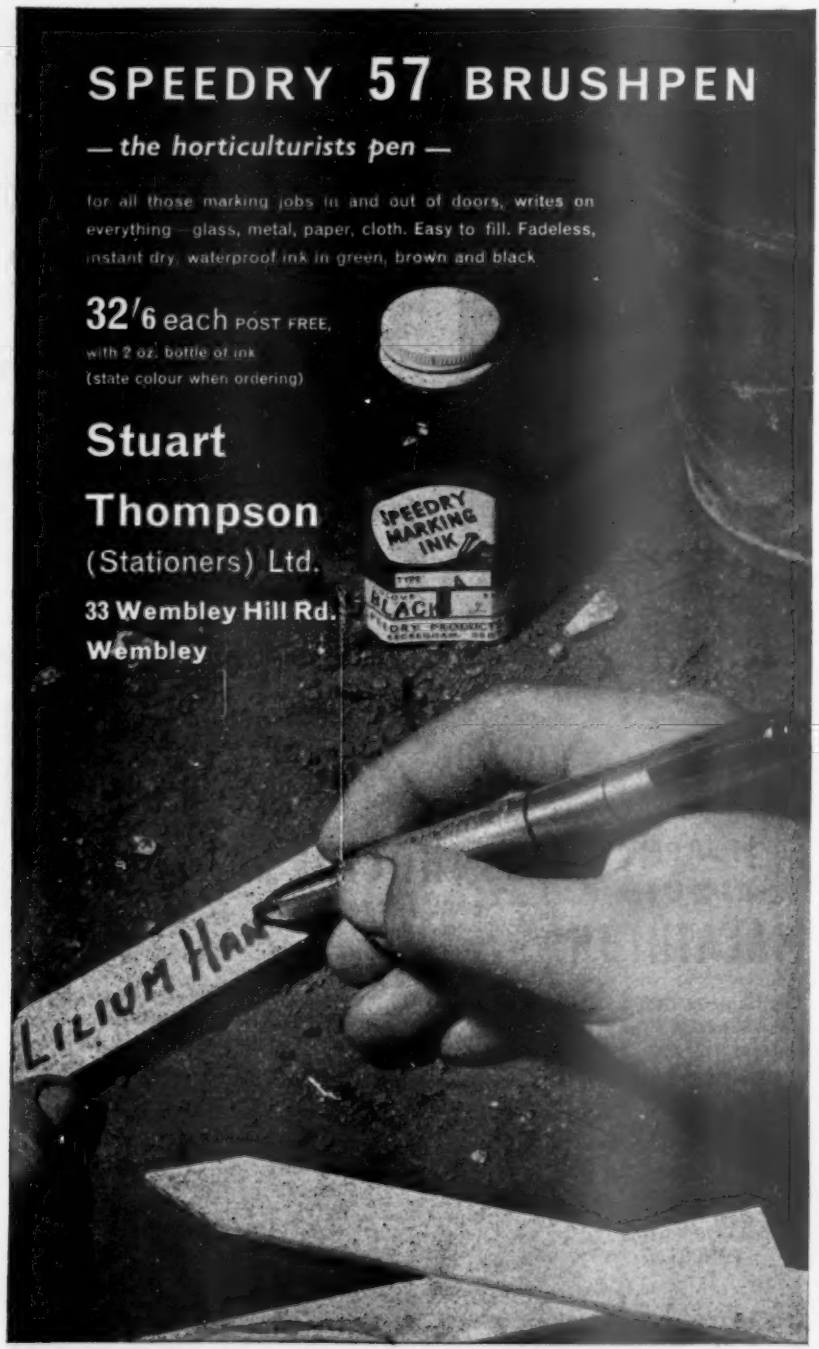

JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

VOL. LXXXV PART SEVEN

JULY 1960

THE SECRETARY'S PAGE

ANNOUNCEMENTS—JULY AND AUGUST

Shows

FRIDAY, July 1 11 A.M. to 7 P.M. SATURDAY, July 2 10 A.M. to 5 P.M.	National Rose Society's Show. (Both Halls on July 1, New Hall only on July 2.)
TUESDAY, July 5 12 NOON to 6 P.M. WEDNESDAY, July 6 10 A.M. to 5 P.M.	Delphinium Society's Show, in the Old Hall.
WEDNESDAY, July 6 12 NOON to 7 p.m.	National Sweet Pea Society's Show, in the New Hall.
SATURDAY, July 9 12 NOON to 7 P.M.	British National Carnation Society's Show, in the Old Hall.
TUESDAY, July 12 12 NOON to 6 P.M. WEDNESDAY, July 13 10 A.M. to 5 P.M.	Fortnightly Flower Show and Fruit and Vegetable Competition, in the New Hall.
TUESDAY, July 19 12 NOON to 6 P.M. WEDNESDAY, July 20 10 A.M. to 5 P.M.	National Association of Flower Arrangement Societies' Festival of Floral Decoration, in both Halls.

Shows—*continued*

TUESDAY, July 26 12 NOON to 6 P.M. WEDNESDAY, July 27 10 A.M. to 5 P.M.	Fortnightly Flower Show, in the New Hall.
TUESDAY, August 9 12 NOON to 6 P.M. WEDNESDAY, August 10 10 A.M. to 5 P.M.	Fortnightly Flower Show, in the New Hall. Gladiolus Competition and British Fuchsia Society's Competition, in the Old Hall.
FRIDAY, August 12 12 NOON to 6 P.M. SATURDAY, August 13 10 A.M. to 5 P.M.	British Gladiolus Society's Show, in the Old Hall
TUESDAY, August 30 12 NOON to 6 P.M. WEDNESDAY, August 31 10 A.M. to 5 P.M.	Fortnightly Flower Show, in the New Hall.

Lectures

TUESDAY, July 12, at 3 P.M. "Cool Greenhouse Plants for Everyman", by MR. L. MAURICE MASON.

TUESDAY, July 26, at 3 P.M. "Trees for Urban Areas and their Treatment for Landscape Effect", by MISS B. COLVIN, P.P.I.L.A.

TUESDAY, August 9, at 3 P.M. "Annuals and Biennials for the Small Garden", by MR. R. J. HUNTLEY.

TUESDAY, August 30, at 3 P.M. "A Plant-Hunting Expedition to the Mountains of Persia", by MR. P. M. SYNGE, M.A., F.L.S.

Demonstrations at Wisley—The following demonstrations will be given at Wisley, that on the succeeding day or days being in each case a repetition of that given on the first.

July 13, 14, 15. Vegetative Propagation of Shrubs and Herbaceous Plants. (Commencing at 2 P.M.)

July 20–21. Summer Pruning of Fruit Trees. (Commencing at 2 P.M.)

Lily Group—Arrangements have been made for members of the Lily Group to visit St. Paul's Walden Bury, nr. Hitchin, the garden of the HON. SIR DAVID BOWES LYON, K.C.V.O., V.M.H., on July 2.

There will be a co-operative display of lilies at the Fortnightly Show on July 12 and 13, and Members of the Lily Group are invited to bring or send lilies for it. SIR FREDERICK STERN, the Chairman of the Group, has kindly undertaken to supervise the staging of the group. Any member who would like to supply flowers for this exhibit is asked to let the

Secretary of the Lily Committee know, on or before the preceding Wednesday, the names of the lilies he proposes to supply and the number of stems, so that the necessary arrangements in regard to space, etc., may be made and cards prepared showing the names of the lilies and the names of the exhibitors.

There will be an "Any Questions ?" Meeting at 4.30 P.M., on Tuesday, July 12, in the Lecture Room in the New Hall.

At 7 P.M., on the same day, members of the Lily Group and their friends will dine together in the Restaurant of the New Hall.

Arrangements have been made for members of the Lily Group to visit Quarry Wood, Burghclere, nr. Newbury, the garden of MR. AND MRS. MARTIN SIMMONS, on July 16.

There will also be a co-operative display of later-flowering lilies at the Fortnightly Show on August 9 and 10. Members of the Lily Group are also invited to supply lilies for this display and the arrangements will be similar to those for the co-operative display on July 12 and 13. A Discussion on "Lilies in the Co-operative Display" will take place at 4.30 P.M. on Tuesday, August 9, in the Lecture Room in the New Hall.

Joint Chrysanthemum Committee—The Joint Chrysanthemum Committee will meet at 12 NOON at the Fortnightly Shows on August 9 and 30, October 11 and 25, and November 29; on September 27 at the Great Autumn Show; at 12.30 P.M. at the National Chrysanthemum Society's Shows on Friday, September 16, and Friday, November 4; at 2 P.M. on Thursday, September 22, at the Sheffield Chrysanthemum Society's Show, Edmund Road Drill Hall, Sheffield; and at 12 NOON on Tuesday, November 15, and Tuesday, December 13.

British National Carnation Society's Show on July 9—In conjunction with the British National Carnation Society's Show, which will be held in the Old Hall on July 9, a short conference on carnations will be held in the Lecture Room in the New Hall, commencing at 2.30 P.M. There will be papers by MR. A. W. GRAY of the Electricity Council's Advisory Section and by MR. G. LOCKIE of Plant Protection Ltd., together with a sound film from America entitled, "The Carnation Story". Fellows of the Society will be admitted on production of their tickets and are invited to take part in the discussions following the lectures.

NOTES FROM WISLEY

N. K. Gould

WITH the passing of midsummer many of the early-flowering trees and shrubs which have been a feature of the Gardens will be going over and we must look to the borders of roses, herbaceous plants and a few late-flowering shrubby genera such as hydrangea for the chief

interest. Sweet peas and other flowers on trial will still be very good, the long border of annual plants on Weather Hill will be at its most colourful stage, the rock garden and alpine house will still offer a very wide variety of interesting plants and there are one or two collections of the species and varieties of special genera which deserve mention. Perhaps the most vivid of these are gazanias, which belong to a South African genus of about twenty-four species of perennial herbs. Not all of these are in cultivation and the most attractive garden plants are hybrids. In the very sunny and sandy nursery beds above the rock garden they grow to perfection and the low tufted plants cover themselves for weeks with large, widely expanded daisy flowers varying in colour from white through all shades of yellow to deep orange and brick-red, occasionally purple, and a characteristic feature of the flower is that each ray petal bears a basal spot or blotch often margined with a contrasting colour. Unfortunately gazanias are not hardy and need protection in the winter. In our experience the best way to treat them is to make cuttings in July and August of the side shoots which grow from the base of the plant and to root these in sandy soil in a closed frame. They may remain here until the time comes in the following June to plant them out, before which they will of course have to be hardened off. In a warm and favourable summer many of them ripen seeds from which novelties may be raised.

The bed on the east side of the alpine house has long been reserved for a collection of species and hybrids of *Cistus* which enjoy the full exposure to the afternoon sun and the protection afforded by a high hedge of Lawson Cypress. For several weeks from May onwards these evergreen shrubs daily open a fresh crop of flat, five-petalled and golden-centred flowers, like single roses, in colours ranging from white to rose and purplish shades, not infrequently blotched with purple or maroon. From our correspondence and conversations with Fellows of the Society, we judge that many people believe cistuses to be very difficult to establish, extremely tender and short-lived. It is quite true that they dislike being transplanted once they are well past the seedling stage, for it is their habit to send long, fibrous roots deep down in the soil and they are therefore best planted in their permanent places when still quite small. Seedlings are perhaps best grown in pots for a time but if they become pot-bound the roots show some disinclination to strike out into the soil when the plants are put out and it is for this reason that some specimens do not establish easily.

Most species, coming as they do from the warm climates of the Mediterranean region, are intolerant of English winters, but one or two, notably *C. laurifolius*, are capable of withstanding even the low temperatures and prolonged frosts of a winter like that of 1946–7. Their ability to survive depends a good deal upon the character of the soil in which they are planted and the degree of shelter they receive from buildings, trees or plants in the immediate vicinity. Species which are inclined to grow rather tall and to have rather bare stretches of stem near the

soil, such as *C. ladaniferus*, benefit by being surrounded with lower-growing things such as lavender or rosemary which afford some shelter and, to some extent, prevent dangerous cracking of their stems.

The individual bush has not generally a long life, but cuttings of slightly soft growths taken in August quickly root in gentle heat and many kinds are quite easily raised from seed which they produce liberally, so it is easy to maintain a stock to replace any losses.

To those who have not previously grown cistuses, we would recommend for a start *C. laurifolius*, an erect shrub at least 6 feet tall with rather dark, ovate leaves and many medium-sized white flowers from June to August, and perhaps the hardiest of all; *C. populifolius*, a bushy plant nearly as tall with lighter green and broader leaves and bunches of white flowers very much like single roses, and a most distinctive hybrid named 'Silver Pink', a small plant suitable for the front of a sunny border or for a rock garden, with grey-green leaves and flowers 3 inches across of a peculiarly attractive pale colour which the name of the plant aptly suggests. For a rather larger collection, we would add *C.* × *purpureus*, which reaches a height of 3 or 4 feet, copiously branched with fine, red-purple flowers, dark blotched near the centre and *C.* × *skanbergii* with pale rose-pink flowers in clusters. A species of very great charm which deserves a special place near a warm wall is *C. ladaniferus*, often called the 'Gum Cistus' on account of the sticky exudate on its stems and leaves from which a pleasant fragrance is emitted. Its great flowers are carried at the tips of the side shoots and they are snow-white, blotched with crimson near the centre which is filled with a boss of golden stamens.

There will be plenty of colour in the rock garden during July and some of the brightest patches are formed by *Lychnis* × *haageana*, a hybrid between *L. fulgens* and *L. coronata*, a very valuable plant not much over 1 foot in height with large, scarlet or crimson flowers, and *L.* × *arkwrightii*, which was obtained by crossing *L. haageana* with *L. chalcedonica*. It is a rather taller plant and has flowers of varying shades of scarlet. Equally bright are the flowers of *Mimulus* 'Wargrave Fireflame', which like the species *M. cardinalis* is happily established near one of the rock-garden pools. *Polygonum affine* is at its best now, with very numerous dense pink spikes standing erect over cushions of foliage and there is also the closely allied *P. millettii* with very richly coloured flowers. Among the many other attractive things to be seen now we may mention *Nierembergia rivularis*, an excellent creeping plant for a moist, sunny place, with many white funnel-shaped blooms not over 3 inches high and *Tiarella wherryi*, which for many weeks sends up slender sprays of blush-white flowers, like those of a saxifrage, above tufts of pale green leaves veined with darker colour, and the earlier autumnal gentians including *G. frigida* and *G. cachemirica*.

In the alpine house there are as usual some very attractive pot plants and some which win a good deal of admiration are *Crepis incana*, with a number of very delicate pink daisy heads above a neat rosette of

foliage; *Anagallis tenella* 'Studland', which forms a mat of tiny green leaves covered by very numerous shell-pink blooms, and the various forms of *Rhodohypoxis baurii*, one of the neatest little plants it is possible to imagine, with radiating pointed leaves an inch or so in length and regular six-petalled crimson, pink or white flowers in a long succession.

In the herbaceous borders near the restaurant a great deal of replanting was done in the early spring and some of the clumps will not reach their fullest development this year, but there should be an extremely good display in the newer mixed borders beside the broad walk to Battleston Hill. In these borders many of the best up-to-date varieties of popular herbaceous plants such as Michaelmas daisies and phlox are represented, but we also try to include as many of the less common species as possible to widen the interest of the borders. Among the latter one may see at the present time such plants as *Cirsium rivulare* var. *atropurpureum*, a thistle-like plant with branching stems terminated by ruby-red flowers of a rather uncommon shade; *Verbascum bombyciferum*, a stately biennial sometimes reaching a height of 6 feet and covered all over with white wool except for its sulphur-yellow flowers; *Dracocephalum sibiricum*, a strong growing erect plant with long spikes of lavender-blue flowers and soon forming a bold and dense clump. The last-named is a very handsome plant but one which has been distributed under several incorrect names including *D. prattii* and *Nepeta macrantha*. One of the most distinct species of the great genus *Penstemon* is *P. isophyllus*, which is almost shrubby in its lower part and sends up tall arching stems, sometimes over 4 feet in height, bearing sprays of narrow scarlet flowers. *Salvia superba* is a well-known border plant valued for its masses of dark blue flowers which fall leaving the stems covered by purplish bracts; but less familiar is a dwarf and compact form of it which is catalogued under the varietal name 'Lubeca'. A plant suitable only for the largest borders or for a site on the edge of open woodland is *Crambe cordifolia*, which is in effect a giant seakale with enormous spreading leaves and a huge globular inflorescence of white flowers reaching several feet in height.

In the annual border leading to the top of Weather Hill many good novelties will be found and in addition many older things which have stood the test of time, as well as certain interesting little species which are not generally grown. Some of the brightest at the present time will be *Lavatera* 'Loveliness', in a very popular shade of pink, *Zinnia* 'Scarlet Flame', *Echium* 'Blue Bedder' and *Nasturtium* 'Firebrand'. It is profitable to inspect this border two or three times during the season as certain annuals although brilliant when in flower last but a short time whereas others continue to flower steadily until killed back by frost; and where only a small space in the garden can be devoted to them these are plainly the best ones to use.

Lilies are at the height of their beauty now and there are many excellent species and hybrids to be seen on Battleston Hill. One of the most remarkable of the hybrids is a group known as Bellingham Hybrids

which are vigorous plants soon forming clumps of tall leafy stems surmounted by great racemes of orange or yellow flowers in the style of *Lilium pardalinum*. *L. martagon album* grows very well in this part of the garden and its pure white flowers are seen to good advantage against the dark rhododendron foliage. Last year the most spectacular of all were a number of hybrids of *L. auratum*, raised from seed sown years ago and now well established. Some of the stems reach a height of 9 feet and carry immense star-shaped flowers of white variously marked with crimson and gold. It is rather late in the season for rhododendrons but certain species, notably *R. auriculatum*, should be conspicuous and hybrids such as 'Amor' and 'Red Cap' help to prolong the display. Some of the later azalea species including the sweetly-scented *R. viscosum*, *R. prunifolium*, which has apricot-coloured flowers and *R. serrulatum*, with either white or purplish flowers, carry the season into late August.

TREE PAEONIES

F. C. Stern, O.B.E., M.C., F.L.S., V.M.H.

(*Lecture given on June* 14, 1960, SIR ERIC SAVILL, K.C.V.O, C.B.E., M.C., M.A., V.M.H., *in the Chair*)

TREE paeonies are all indigenous in a wild state to South-East Asia; the most important species from the point of view of their flowers are *Paeonia suffruticosa* and *P. lutea* var. *ludlowii*, and possibly *P. lutea* itself, for its value for crossing with other tree paeonies. All the tree species are useful and attractive plants, but cannot compare for beauty with those mentioned above. *P. delavayi* has dark red open flowers about 3 to 4 inches across, and grows into a large bush about 6 feet high; there are a number of forms of this species, all varying in the size and the shade of colour of their dark red flowers. This plant is useful in the garden as it will do well under deciduous trees.

A smaller tree species, *P. potanini* and its varieties, are low growing, about 2 feet high with smaller flowers about 2 to 2½ inches across; there are several forms, some with yellow flowers, some with red and some white. These plants sucker freely, growing in sun or shade, and are suitable as undershrubs in the woodland garden.

The most beautiful of all the tree paeony species is *P. suffruticosa*, and its different forms, often known as the "Moutan" paeonies. "Moutan" is said to be derived from the Chinese "Mowtan", translated 'Male Scarlet Flower". It is the national flower of China; the red form was considered by the Chinese to be the finest. The Chinese grew these paeonies in their gardens for literally hundreds of years. JOHANN HOFFMAN (1) quotes from the Chinese literature that the "Moutans" were well known and loved by the Chinese already in the eighth century. Although these plants were well known in China and Japan since the

earliest times, they were unknown in Europe or America till about 1787. E. H. WILSON in his *Monograph of Azaleas* of 1921 (7) says that Chinese Buddhist monks introduced many plants from China and Korea to Japan as early as the eighth century and among them plants of tree paeonies.

In 1656 an Embassy of the Dutch East India Company was received by the EMPEROR at Peking. On their return NIEVHOF, in 1656 (2), described this journey and the plants they had seen, including the paeonies to which he gave great praise. But nothing seems to have been done about introducing these plants till a hundred years later. SIR JOSEPH BANKS is said to have read NIEVHOF's report and also seen drawings of these plants by Chinese artists. He engaged a DR. DUNCAN, attached to the British East India Company, to procure a plant. It came back to England about 1787 when it was planted at Kew and another in 1789 was planted in SIR JOSEPH's garden, later to be named *P. moutan* var. *banksia*, with double pink flowers; in 1825 it was said to be about 8 feet high and 10 feet in diameter. In 1802 (or perhaps in 1794?) SIR ABRAHAM HUME imported a plant to his garden at Wormley Bury in Hertfordshire, which in 1826 was recorded as being 7 feet high and 14 feet in circumference. This garden in recent years belonged to the late MAJOR PAM. This plant was named *P. moutan* var. *papaveracea* and illustrated in the *Botanical Magazine*, t. 2175 of 1820; it had white flowers with deep red markings at the base of the petals. I saw the remains of this plant still growing at Wormley Bury, with one flower, a few years ago.

Although tree paeonies were grown in gardens throughout China, Korea and Japan for a great number of years, the location of the wild plants was not known till about 1890 when SCALLON and GIRALDI (3) discovered the true wild plants in the province of Shensi in China; they did not collect any living plants or seeds. In 1910 PURDOM found wild tree paeonies also in the province of Shensi. He sent a dried specimen to the Arnold Arboretum at Boston, U.S.A., and seed to PROFESSOR SARGENT and to Messrs. James Veitch in England. The young plants at Boston were eaten by rats; only one was raised by Messrs. Veitch which was sent to PROFESSOR SARGENT. In April 1914 REGINALD FARRER (4) found the tree paeonies in the province of Kansu in China, and he gives a glorious description of the plants in his book *On the Eaves of the World*, but he collected no seed or dried specimens.

The wild plant was not in cultivation till DR. J. F. ROCK sent seed back to the Arnold Arboretum in 1926. The Arboretum distributed the seed and one plant was sent to us in 1936. When it flowered, it seemed to tally exactly with the wild plants described by FARRER. (R.H.S. JOURNAL, **84**, Fig. 104, 1959.) DR. ROCK wrote from China that the seed sent back by him was collected from plants in the garden of a Lamasery at Choni, in South-West Kansu, and the Lamas told him that the plants came from the mountains of that district. This plant is now about 8 feet high and 12 feet in diameter.

SIR JOSEPH BANKS' plant mentioned above was described in his *Botanist's Repository* of 1804 (5), under the name of *P. suffruticosa*, which is now considered the correct name of the wild tree paeony of China.

A few garden "Moutan" paeonies were imported from China at the beginning of the nineteenth century, but few survived the journey. About this time seed seems to have been brought from China and Japan, for seedlings began to appear in French and American gardens. SIEBOLD (6) in 1844 brought back some especially fine plants to Germany from Japan. In February 1843 ROBERT FORTUNE was sent out to China by the Horticultural Society (as the R.H.S. was then known) at a salary of £100 a year plus expenses. He was able in 1846 to bring back living plants of some of the best tree paeonies; these gradually came into cultivation in Europe and America. Some of the nurserymen in England later on began to catalogue these paeonies. Messrs. Kelway are reported to have offered them in their catalogue of 1889. All these plants are reported as having single or double flowers, pink, white or purple.

It was not until about 1902 that a new phase in hybridizing the paeonies took place. Before this there was no hybridizing, as far as is known, between the species of tree paeonies. In 1882 ABBÉ DELAVAY, one of the French missionaries, discovered *P. lutea*, the yellow-flowered tree paeony species, in Yunnan and sent seed to France. This species flowered for the first time in England in the Temperate House at Kew in 1900. Soon after 1902 Messrs. Lemoine of Nancy, father and son, who were already famous for their hybridizing of philadelphus and lilacs, began to use *P. lutea* to cross with the "Moutan" garden tree paeonies. They produced some striking new hybrids with yellow flowers, such as 'L'Espérance' and 'Alice Harding' with double flowers of deep yellow; these double flowers are not too heavy and are held well above the foliage. In some of the double-flowered forms, the flowers are so heavy that the stems cannot hold them up, especially after rain. An old hybrid 'Comtesse de Tudor', bred in France by CHARLES GOMBAULT in 1889, has large very double flowers, rose-du-Barri pink, about 9 inches across; it is not a good garden plant as these fine flowers fall over, but in a vase they are magnificent. It is still in cultivation in English gardens.

In 1917 PROFESSOR A. P. SAUNDERS, Professor of Chemistry at Hamilton College, Clinton, New York, began crossing paeony species in his garden. SAUNDERS is responsible for some of the finest crosses of both herbaceous and tree paeonies. His 'Argosy' is the best of the single yellows and his 'Black Pirate' has magnificent deep mahogany-red flowers (R.H.S. JOURNAL, **84**, Fig. 118, 1959); he has produced many other excellent hybrids.

In 1936 LUDLOW and SHERRIFF collected seed of a variety of *P. lutea* in South-West Tibet at about 10,000 feet. Seed was sent to us under the name of *P. lutea*. Several plants were raised and because we did

not think much of *P. lutea* as the flowers are usually held under the leaves, we thought we would try a tree paeony on the chalk rubble on the side of the chalk cliff. To our astonishment these plants became taller and taller and eventually large deep butter-yellow flowers appeared well up above the foliage, about 5 inches in diameter. This first-class paeony species was named after one of the collectors, *P. lutea* var. *ludlowii* (10) (Fig. 85). It is the earliest of the larger tree paeonies to flower in May, is perfectly hardy and seems happy in any soil. I have not heard of any hybrids made between this paeony and garden tree paeonies. We have tried and have not yet been successful.

Some young plants without names were brought to us many years ago from Japan. They grew well on the chalk soil; some had white flowers and some good pink ones. One with an extra fine pink flower with a sheen on the petals was named 'Silver Pink'. From seed of this plant in open pollination we raised some lovely plants; one named 'Mrs. George Warre' had rose-pink flowers about 10 inches across, and another with large light-pink semi-double flowers was named 'Cassandra'. It is fascinating to raise seed of the tree paeonies, but alas the seedlings take five or six years to flower! A friend sent us seed from some of the best plants growing in the gardens in the south of France; they came all colours of white, purple, and pink, but one turned out to have real rich scarlet flowers, an unusual colour and is now named 'Sybil Stern' (R.H.S. JOURNAL, **83**, Fig. 142, 1958).

The cultivation of tree paeonies is not difficult as long as they have well-drained soil. They require a good loam with or without lime. They dislike animal manure. When we started to grow these plants we thought they ought to be well fed. They did not like the old cow manure and some died. It was interesting to read lately in Paxton's *Magazine of Botany*, XVI (1) of 1849, in a translation of HOFFMAN's articles on tree paeonies from old Chinese and Japanese writings, that "the use of animal matter as manure has proved to be injurious". We have never given the plants any animal manure nor any old mushroom manure for the last twenty years or so, but just very old leaves in autumn.

All tree paeonies are perfectly hardy plants and will stand any amount of frost as long as the young growths have not started. The real danger with tree paeonies is that they are apt to get the young growth injured in a mild winter and spring. This new growth, which holds the flowers, comes very early in the year and may get injured by a late frost or even a cold east wind. In order to circumvent this, we have tried to make the plants delay their early growth by planting them in half shade among deciduous shrubs and small trees, and also on the north side of evergreen shrubs away from the morning sun and protected from the east wind.

The crossing of tree paeonies is not easy. The flowers have a mass of anthers which have to be removed before the flower opens. It is a tiresome job and one is apt to get lumbago doing it in an east wind. The pollen of the male parent has to be dry and fresh and in May the

pollen on the anthers is very often damp. We find the best plan is to cut the flowers of the male parent just before they open and put them in water in a warm room so as to get the pollen as fresh and dry as possible. In raising seed, it is most successful to sow the seed as soon as the capsule begins to open. In this way the germination of the seed is much quicker and more even. This is true of all paeony seed. It is very interesting to read in the translations of HOFFMAN from the original Chinese works of 1596 that, "Seeds should be sown immediately after they are ripe as soon as the seed vessel commences to open and show its seeds within".

The best time to move tree paeonies in the south of England is the first week in October. They dislike moving and often die back after moving but soon recover.

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THREE FAMOUS CHARLESTON GARDENS

Lanning Roper

FOR the garden-lover who happens to find himself in the United States in late winter or early spring there is no pilgrimage more rewarding than a visit to the three famous gardens which are situated in what is known as the Low country a few miles inland from Charleston, South Carolina. This historic city, which played so important a role in American history, is itself one of the most unspoiled cities in the South, with its beautifully preserved colonial houses of architectural distinction and its hundreds of small gardens, which make the streets in the old quarter an exciting experience for they are highly original in conception and crammed with flowers for the better part of the year. But it is because of Middleton Place, Magnolia Gardens and the Cypress Gardens that Charleston has become a mecca for garden lovers.

Charleston is far enough south so that the winters are never severe although there are occasional very sharp frosts and freezes. It is on a

parallel with Morocco and being on the coast the climate is still further tempered. A seaport and a naval base, it is situated at the confluence of two rivers, the Ashley and the Cooper. These are important to our story as in the early days rivers were the easiest means of access to the plantations which were built along them, and their winding courses through the marshes and flat wooded country explain the curious nostalgic beauty of the landscape.

The early settlers in the eighteenth century built large comfortable homes, in the Georgian style to which they were accustomed, and farmed and gardened along generous lines, for there was almost unlimited labour in the days of the negro slave, and this fortunate state lasted until the Civil War, or the War between the States as it is still referred to in the South, spelled the doom of so many of these great plantations. Rice was the major crop. The flat marsh-land, rich in vegetable matter and easily flooded, coupled with a long, hot, growing season, made its cultivation easy, and it was rice that was one of the principal sources of wealth to the early planters. Later, where rice once grew so successfully, men with vision and a creative urge were to develop the spectacular gardens of azaleas, magnolias and camellias which have made South Carolina famous. The rich black silt which had proved so propitious for grain was to prove equally so for flowering trees and shrubs. Moreover, there were already giant live oaks, water cypresses, a variety of pines, tulip trees and other natives to provide high shade canopies and rich dark backgrounds for the flaming masses of colour. Water was a problem only in so far as a system of dykes was necessary to hold back the flood waters in spring after heavy rains. It is the gently flowing rivers, the vistas over the marshes with reeds and wild rice rippling in the wind, the dark lakes and lagoons with their mirrored reflections, and the sluggish streams and canals that dominate the landscape and are the outstanding features in the gardens which I am to describe. They explain the sites that were selected. They control the landscape design and even make possible the native trees and flora.

Before discussing each of the three famous gardens in detail, a little information about the salient indigenous trees and flowers will be expedient. Three trees stand out—the live oak (*Quercus virginiana*), a close relative of the European *Quercus ilex*, the swamp or bald cypress (*Taxodium distichum*) which is frequently seen in British gardens, and the palmetto (*Sabal palmetto*).

The live oaks in South Carolina grow to enormous size. Avenues of them leading to plantation houses as at Magnolia Gardens and Middleton Place are a familiar sight, recalling the great eighteenth-century avenues of limes, beeches, chestnuts and oaks in this country. These giant oaks are everygreen, only shedding their olive-green leaves when new growth commences in spring. Seldom more than 50 or 60 feet in height, specimens sometimes have an enormous spread, the great branches, as thick as the main stem of many a forest tree, growing out horizontally to form a vast leafy canopy. The stems and branches are

gnarled and twisted so that the trees have great character. At Middleton Place there is a fine old specimen estimated to be over nine hundred years old with a trunk 37 feet in circumference and the span of its limbs measuring 145 feet. This is just an example of the size which live oaks have obtained in spite of hurricanes, earthquakes and the depredations of man, as the timber of the live oak was the most highly prized of all varieties for ship-building in the days of sailing clippers. The forks of branches with the trunk were utilized as "knees" or braces in the construction of the hulls of many a mighty frigate. In spring the dark foliage becomes tinged with a warm haze of yellowish green of the new leaves and the little pendulous tassels of the male flowers dusted with yellow pollen. It is then that the live oak is most beautiful. In autumn they are laden with small, brown, tapered acorns tightly clasped in rough greenish cups.

The second very characteristic tree is the swamp cypress, which though common to all three gardens in profusion, is best seen at the Cypress Gardens, named accordingly. Here it is the dominant tree and the visitor is staggered by its tall straight stems growing out of the water with numerous "knees" at the base. These strange woody protuberances are sent up from the roots so that the tree can breathe. These can be likened to fantastic wooden stalagmites with rounded tops or to some strange convention in Chinese painting. It is curious how the cypress has adapted itself so that it is equally at home with its roots under water or to normal conditions where all it requires is a relatively moist root run. There are very large specimens at Pusey House in Berkshire and at Syon House on the Thames.

One more tree must be mentioned here, the palmetto, which is the state tree of South Carolina as well as of Florida. It is also known as the cabbage palm, so called because of the succulent growth bud, shaped not unlike a pointed cabbage, with fine textured, creamy white, delicately flavoured leaves. This was often eaten by the Indians and is today regarded as a delicacy, either as a vegetable or as a salad. The palmetto attains a height of 30 to 40 feet, and even taller farther south, but it is particularly prevalent as a low shrubby tree with its bold palm-like leaves as much as 5 or 6 feet broad made up of a series of coarse sword-like segments with hairy filaments along the edges. They are a strong bright green and their bold form is a wonderful foil to the soft feathery texture of azaleas, bamboos and, for that matter, the foliage of live oaks and swamp cypresses. This tree has become known by its specific name *palmetto*, while the origin of its generic name *Sabal* is shrouded in mystery. The palmetto seeds itself widely and this is not surprising as the characteristic inflorescence is made up of a branching panicle often several feet in length, with closely packed honey-drenched flowers which develop into black plum-like drupes, which germinate readily in moist warm conditions. The great quantity of fruits produced in a single inflorescence readily explains why the palmetto is ubiquitous to the point of being a nuisance.

The climate in the Charleston area is sunny and warm. By mid-February the early flowering shrubs have started and camellias bloom from late November on, starting as early as September with cultivars of *Camellia sasanqua*, which give a far better performance than they do in England. The peak of the flowering season for *C. japonica* comes in March and lasts into April. Then with May the days become very warm and flowers are of brief duration. The tourist from warmer climes no longer stops on his way north; the pilgrimages are ended. As a result the three famous gardens under discussion, which are open to the public daily for a relatively short spring season, have been planted with this period in mind. This makes for a maximum concentration of flowers in a few months, but the gardens are less interesting horticulturally as a result. Trees and shrubs which I personally would like to see included are deliberately omitted. This is particularly true of the Cypress Gardens and to a lesser degree of Magnolia Gardens. Middleton Gardens are open for a longer season, due to the emphasis on formal layout which makes this plantation of interest at any season. Even here though there is tremendous emphasis on a limited number of genera.

THE CYPRESS GARDENS

The Cypress Gardens are located on the Cooper River twenty-four miles north of Charleston. Originally they were part of Dean Hall Plantation, an unusually prosperous plantation in the eighteenth century, which in the second quarter of the next century was enlarged to a community of over five hundred persons, all of whom were engaged on the estate, many of them in the cultivation of rice. Amidst the natural cypress forests of almost impenetrable density a fresh-water lake provided the invaluable supply of fresh water required to flood the rice fields at such seasons when the tide waters became brackish. The natural lake was cleared and enlarged with a system of dykes and ditches which lead the fresh water to all parts of the estate. After the Confederate War the maintenance of the vast rice fields became impossible and they were abandoned. Gradually the trees encroached. The dykes caved in and the canals were overgrown with weed and scrub. What had been a miracle of good husbandry became once more a veritable wilderness.

In 1927 BENJAMIN R. KITTREDGE, then the owner of Dean Hall, embarked on a herculean project which would utilize the weird magical forest of cypress trees and black lagoons as a setting for a vast azalea garden. Gradually with a task force of about two hundred men the lake was cleared so that there were long vistas, secluded lagoons and narrow inlets. Dykes were restored and an intricate system of paths was conceived encircling the lake and linking the small islands with the shore by a series of rustic bridges. Needless to say, endless felling of trees was required to let in enough sunlight to encourage healthy growth of shrubs and flowers and to create the fascinating shadow pictures in the inky

water, the colour of which is partly caused by the tannic acid exuded by the root systems of swamp cypresses and partly by the black organic silt which forms the bottom.

MR. KITTREDGE then undertook the planting. Azaleas were planted by the thousands so that there were banks of rich colour along the water and bordering the paths as they cut inland across promontories or lead to secluded bits of forest. Today there are between forty and fifty varieties of Indian azaleas (hybrids of *Rhododendron indicum*) as well as some of the Japanese Kurumes. Camellias were also planted and these have developed into large trees and shrubs covered with blooms from December until late April. Varieties include old European favourites such as 'Doncekelaari', 'Gloire de Nantes', 'Mathotiana Rubra' and 'Magnoliaeflora'. A large number of new American cultivars have been added through the years. Daffodils were planted by the ton along the paths and on the grassy banks. Fine old plants of *Daphne odora*, the tea olive (*Osmanthus fragrans*) and azaleas fill the moist air with delicious heavy fragrances. Many other shrubs were planted, but those mentioned above predominated then as they still do. Gradually the wilderness became a garden. In 1951 MR. KITTRIDGE died and his son, who bears his name, carries on in the same tradition.

Today the visitor can view the gardens either from a boat or from the circuitous footpaths. The wise one does both. The boat glides between banks of brilliant azaleas, here a mass of pink or brilliant red, further on white or mixed colours in tumbling masses. The route, cleverly indicated with arrows, leads through narrow channels where there is just room enough to pass comfortably, with a canopy of flowers overhead to open stretches of sable-black water ringed by lofty cypresses draped with silvery grey Spanish moss, which is another great feature of these magic gardens. The moss (*Tillandsia usneoides*) drips from the cypresses, from the live oaks, the sweet gums, from all the trees. It hangs in long beards from the twigs and leaves, catching the faintest breath of wind and trembling so that a subtle pattern of light and shade plays on its fine textured surfaces. It is not in any way parasitic but a true epiphyte, taking its nourishment from the moist air. Spanish moss is as much a part of the Cypress Gardens as the cypress trees themselves. It is a wonderful foil for the brilliant colour of flowers and is particularly lovely in early spring with the vivid tender green of the new foliage of the trees, for *Taxodium distichum*, like young larch trees, has peculiarly vibrant green needles. (Figs. 86–89.)

Further on, the boat passes under a bridge draped with the lovely, single white, golden-centred, Cherokee rose (*Rosa laevigata*), which catches the brilliant spring sunshine. Then there is a dark stretch with eerie shadows, all inky water, mirroring the cinnamon-coloured stems of the cypresses and the complex battery of gnarled cypress knees along the shore, like some weird underwater defence system. There is an island completely planted with white flowers, white azaleas, white daffodils, white camellias—and in the tree-tops far above our heads

wistaria seeks the light, its long mauve racemes contrasting with the silvery moss. The twisted dark stems of wild grapes look not unlike writhing serpents. Even more convincing are long vine ropes of *Berchemia scandens*, amusingly called "Supple Jack", and *Doxantha* (*Bignonia*) *capreolata* with its tubular reddish-yellow flowers.

One of the loveliest of native climbers is the yellow Carolina jasmine (*Gelsemium sempervirens*). It has neat dark green foliage borne along its twining stems, which work their way through shrubs and undergrowth, along walls, up trees and over railings. Its real glory is the mass of waxy butter-yellow tubular flowers not unlike a small yellow foxglove but with a wider limb. It is a lovely exuberant climber, which tumbles over the planting along the paths and roadsides with the same abandoned quality that makes old man's beard so endearing. *Gelsemium* is not indigenous in Europe and is little known in British gardens. I can see no reason why it should not be an attractive addition to gardens in the milder districts, for it has been successfully grown at Bales Mead in Porlock. AUDUBON was much taken with this lovely plant and it is featured in several of his fine bird plates. This native jasmine is common to the other Charleston gardens just as it is to the thickets along the roadsides and the swamps.

Another striking native in the Cypress Gardens is *Zephyranthes atamasco*, the Atamasco lily, which grows in moist sunny positions among the grass. Its upright white chalice, like a large but very delicate crocus, stars the banks, gleaming white in contrast to the inky water. With age the flowers take on a reddish tinge and it is claimed that this property explains the specific name *atamasco*, which in an American Indian dialect means "turning red". This so-called lily, like many others, is really a member of the Amaryllis Family. My first sight in the Cypress Gardens on a soft sunny April day of a colony of these exquisite flowers is an unforgettable memory, just as the sound of the yellow-throated warbler, the stately red cardinal and the curiously liquid lilting melody of the mocking-bird always recall those early gardening pilgrimages to Charleston plantations.

When a circuit of the garden has been made by boat a slow perambulation is equally rewarding, for the reflections from the shore are in some ways even more entrancing and it is possible to study the plants at close range. Over three hundred varieties of camellias have been planted and there are continual operations to control the rapid regeneration of the encroaching wilderness. Alas, many of the original plants of *Daphne odora* have died as it is not a long-lived plant. These are being replaced with young plants and these together with the older ones flowered more freely in the early spring of this year than for many years past. In early summer the lake is drained, the gardens are closed and only a few workmen and the wild life are left. The season for Cypress Gardens is a short one and the cost of maintenance today makes the future of this remarkable garden, like so many others, uncertain.

MAGNOLIA GARDENS

Magnolia Gardens, located on the Ashley River about 11 miles from Charleston, are very different in character from the Gardens just described, although again the land is low-lying, flat and dominated by the masses of water which give it its character. We approach by a road that leads through wooded swampland and finally enter an avenue shaded by live oaks, venerable, moss-hung and spreading. We feel suddenly that we have entered an old plantation, rich with background yet alive and vital today. This is no false impression, for MR. C. NORWOOD HASTIE, the present owner, continues the tradition of nine generations of the Drayton family who have lived there.

At the end of the avenue stands a wooden house, the third to be built on the site, the first having been destroyed by fire in 1780, and the second demolished, again by fire (1865), during the siege of Charleston during the War between the States. The house with its acres of lawn stands on the axis of the front avenue, like so many southern plantations, and is the focal point of the gardens which were developed around it, today covering over 25 acres. There are lawns, formal gardens, shrubberies, a breath-taking view of the river, four lakes of varying sizes with woodland paths and, beyond, wild woodland with native gum trees, oaks and a variety of pines, including *Pinus taeda*, a tall straight tree which provides valuable timber and ample supplies of turpentine and resin. As the lower limbs tend to be cast off naturally, these pines are tidier than many other species.

The garden is entered to the right of the house by a path that leads through a grove of trees which includes the California redwood (*Sequoia sempervirens*), the native evergreen magnolia (*M. grandiflora*), the eastern dogwood (*Cornus florida*), which becomes a mass of white in April, live oaks and everywhere camellias. Soon the path skirts a narrow curved lake backed by woodland. The far bank is a solid mass of mature azaleas in shades of pink and red. Continuing on, the path doubles back towards the house and then turns at right angles towards the river to form the east side of a lawn planted with trees and shrubs and overlooked by the house. Here we find century-old camellias and a wide variety of interesting plants. Pyracantha, still bearing its brilliant berries in late February, was very effective against the grey moss-hung oaks and pines. A huge specimen of the plum-fruited yew (*Podocarpus andinus*), mature spreading trees of *Magnolia soulangeana* and *stellata*, *Jasminum nudiflorum*, flowering crabs and *Osmanthus fragrans* are happily grouped among the much larger beeches, sycamores and oaks.

At the end of the lawn the path turns left and follows the river. The view is enchanting, as the river flows lazily through broad ribbons of reeds and wild rice. Much of the nearer marsh has been made into a bird sanctuary. It is pleasant to sit under the huge live oaks which lean out over the path and the ivy-clad river bank and to watch herons, wild duck and other water-fowl in endless variety flying low over the

marshes. It is worth noting that shooting and fishing are superb and hence the diet on the Charleston plantations features masses of game including duck, quail, wild turkey, partridge and pheasant, with fine shrimps, soft-shell crabs and shad from the rivers.

Under some of the largest oaks along the river path is a vast ancestral tomb carved in 1795 by JARDELLA, an Italian sculptor who came to America. A huge crack in the marble is an ever-present reminder of the earthquake of 1886. This tomb, in a setting of magnolias and willow oaks (*Quercus phellos*), bears this inscription: "Reverend John Grimké-Drayton 1815–1891 . . . Creator of this garden, the spirit of which speaks more eloquently than words of the vision which was his." It is a fitting epitaph in a fitting place.

A 14-foot path known as the Old Broad Walk leads back to the house from the river. This at one time served as the main avenue leading from the house to the landing-stage on the river, by which all visitors arrived before hard-surfaced roads became reality. Only one of the magnificent magnolias in the old avenue remains, although from them the estate took its name. The sole survivor is a vast tree with huge, glistening, dark green leaves, silver-backed when young but soon changing to the familiar glowing reddish brown. The gardens are closed to the public long before the lemon-scented, creamy white flowers open, but these southern magnolias are a thing of beauty at every month in the year.

A yellow Banksian rose with a stem 8 inches in diameter climbs over an arbor across the path and then to dizzying heights in a nearby hackberry tree (*Celtis occidentalis*), vying with wistaria in a sycamore, a lovely combination of mauve and silver and white. Island plantings on the lawn contain huge deodar cedars, wellingtonias and massed plantings of azaleas (Fig. 91). Other features are a huge crape myrtle (*Lagestroemia indica*) with satin-smooth brown barkless stems, twelve in number springing from one root, and a rugged old camellia tree with a trunk 3 feet 6 inches in diameter and a spread of 26 feet.

The river path leads to a large curving body of water known as the Cypress Lake from the numerous huge bald cypresses which surround it. A path encircles the lake so that the visitor walks with the dark water filled with shimmering reflections on one side and on the other enormous banks of azaleas and camellias backed by virgin Loblolly pines (*Pinus taeda*), now comparatively rare in South Carolina. Nearby are several other smaller lakes encircled by palmettoes and partially concealed in the trees.

From the bottom of Cypress Lake there is a particularly beautiful vista over the water to a white wooden bridge garlanded with Cherokee roses and wistarias.

A mass of *Rhododendron amoenum coccineum* plants, many of them 10 to 12 feet tall, form a dazzling mass of colour, and there are broad groups of other varieties of evergreen azaleas which include *Rhododendron amoenum*, 'Apollo' and 'Barclayana'. A splendid white, 'Beauty of

Europe', was awarded a first prize in Ghent in 1855. The rose-and-white 'Exquisite', which appeared in 1844, and the double white 'Flag of Truce', introduced in 1863, are particularly lovely. The first of the azaleas were imported along with camellias from England and France in 1848, and the bulk of the collection consists of these old varieties.

A letter dated January 6, 1858, from the REVEREND JOHN GRIMKÉ-DRAYTON to a fellow clergyman still survives: "I was afraid the other day that I had been exaggerating when, in answer to inquiries, I told a friend that there might be some one hundred and twenty varieties of camellias and magnolias. So I sat down and summed up the count afterwards and found that number of fine double varieties and how many more singles I do not pretend to know—their names seem to be something like legion. Many of the plants are near 10 feet high and as thick as a holly bush, with almost as many flowers as leaves." As these must have been imported plants it is safe to assume they were at least five years old when received in 1848 and therefore they are today about 115 years old, according to MR. NORWOOD HASTIE's calculations.

Among the vast number of camellias in the garden there are old European favourites including 'Alba Plena', 'Fimbriata', 'Lady Hume's Blush', 'Myrtifolia', 'Candidissima', 'Latifolia', 'Marchioness of Exeter', 'Tricolor' (Siebold), 'Mathotiana', 'Elegans', and many others. Many of the old varieties are still unidentified. In addition there are hundreds of seedlings of varying quality. Seedlings of REV. JOHN DRAYTON's include 'Catherine Cathcart', 'Martin's Favourite', 'Eleanor Hagood', 'Duchess of Sutherland' and the one that bears his name 'Rev. John G. Drayton'. From others MR. HASTIE has selected the best and some of the most popular camellias in cultivation in America were raised at Magnolia Gardens. These include 'Elizabeth Arden', 'Debutante', 'Mrs. Charles Cobb', and 'Elizabeth Boardman', and these are readily available in the trade today.

At one point the path leaves Cypress Lake and winds through open glades in the woods. Mosses and ferns delight the eye, especially a plant known as the Resurrection Fern which grows on the branches of the live oaks. This delightful little fern takes its name from the fact that it appears to dry up completely during long dry periods but with the first rains revives and continues its growth unharmed. In the woods we hear the songs of the great number of native birds above the continuous peep of the myriads of tiny frogs that sound a never-ending symphony from the advent of spring. To Americans they are always known simply as "Spring Peepers".

Under a graceful spreading oak there is a dark green ground cover of ivy. Clumps of palmettoes with huge leaves and a jungle of feathery bamboos in the background provide a wonderful contrast of greens and foliage textures and shapes. Lavender wistarias sprawl on the ground and here and there island plantings and broad borders of azaleas make vivid splashes of colour. One known as 'Prince of Orange' was particularly effective, its fierce hot orange set off by the carpet of dull

brown pine needles and by the half-submerged roots of the oaks sprawling across the path like the elongated grey tentacles of a prehistoric monster.

Suddenly there is an open vista through the trees to the park in front of the house and soon the path returns to the edge of the upper lake. We cross the white latticed bridge, pausing to admire the cascades of Cherokee roses and wistaria in the trees above it (Fig. 92). The stems of the cypresses are a rich chocolate-brown, and the dark water is even darker in the shadows of a spreading sycamore at the water's edge. There are hundreds of "knees" of cypresses in this area and, familiar as they have already become, the visitor is again struck by their fantastically grotesque shapes as he looks down on them from the bridge.

We now enter an old formal garden, known as Flowerdale, undoubtedly laid out in conjunction with one of the earlier houses. Here is a magnificent old Chinese yew, claimed by the late PROF. C. S. SARGENT to be the finest example of this species in America. With it are very old camellias, several between 25 and 30 feet in height.

From here we cross the lawn along the river side of the house. In late February the flowering peaches make a fine show as well as a huge bush of orange-red flowering quince and the native *Cercis canadensis*, not quite the same as the European *Cercis siliquastrum* but one of the great beauties of the eastern coast. Its wonderful reddish pink pea-like flowers are borne in such profusion that whole valleys are coloured by it. It is particularly effective with *Cornus florida*. In the South it is generally referred to as Redbud, but the European vernacular name of Judas tree is also used.

The visitor leaves by the same gate by which he entered. The next stop is often at one of the nurseries of the plantation. In 1941 MR. NORWOOD HASTIE seriously entered that field in a further endeavour to make the estate self-supporting. The modest early venture has grown and prospered until today he has five separate nurseries and a large staff. The principal stocks are obviously camellias and azaleas, but there are many other lines including hollies, gardenias, small-leaved evergreen ilexes, so much in demand in America to-day, and numerous other hardy shrubs. The plants are lined out in the light sandy soil underneath lines of native pines, which provide the needed shade from the burning summer suns. Water is laid on and work is highly mechanized. Heavy mulches of sawdust, readily available from nearby saw mills, are used to retain moisture and as a weed control. Light doses of urea crystals are used at intervals to feed the soil. I have already noted some of the fine camellias raised at Magnolia Gardens and there are literally hundreds more on trial to determine their commercial worth. At the moment, reds are in biggest demand. Sasanqua types are also increasingly popular. It has been found that the loose semi-doubles are not as subject to frost damage as the tightly imbricated varieties, which often do not open well in severe weather.

Pests and diseases are a serious problem in the South, possibly due

to the long periods of humid heat. Camellias and azaleas have to be sprayed throughout the year, the most persistent pests being red spider, lace bug and scale. One of the most serious of all scourges is the so-called "Blossom Wilt" which attacks the flowers of azaleas. One minute the developed flowers and buds are crisp and sound, the next they are brown, sodden and decaying. As a result every flower throughout the garden must be sprayed every other day with a trade compound known as Dithane. This is a serious undertaking as the areas to cover are vast and many of the plantings are difficult to reach, especially those along the lakes, many of which have to be sprayed from a boat.

Weather also plays evil tricks. In 1950 a very severe freeze destroyed a vast quantity of plants, particularly azaleas. Then there followed three years of devastating drought. The effects of these climatical disasters were felt over a ten-year period. Many plants which were not destroyed outright succumbed at a later date. Gardening in the Charleston area is not easy but it is worth every effort, as Magnolia Gardens attest.

Each year about twenty-five thousand people visit Magnolia Gardens between January 1 and May 1. Years ago JOHN GALSWORTHY made this comment after a visit: "Everyone who goes to Charleston in the Spring visits Magnolia. I specialize in gardens, and freely assert that none other in the world is so beautiful. It is a kind of paradise which has wandered down, a miraculously enchanted wilderness." Earlier, at the turn of the century, the *Baedeker Guide* listed only three double-starred attractions in America: Niagara Falls, the Grand Canyon and Magnolia Gardens. This is of particular interest as it shows for how long a period these gardens have been famous.

MIDDLETON PLACE

The third of the great gardens is Middleton Place, located on a curve of the Ashley River a few miles above Magnolia Gardens. This is the oldest of the three gardens and was conceived in the grand manner with elaborate terracing, parterre gardens and formal reflecting pools. It has a highly integrated ground plan which effectively combines both formal and informal elements. The planting is similar to that found in the other two gardens with a predominance of azaleas and camellias but they have been used with care to carry out the formal conception of the entire scheme.

This vast layout was started in 1741 by HENRY MIDDLETON, who was a distinguished figure in Colonial affairs. His tradition was carried on by his son and grandson, likewise distinguished figures. The brick mansion with its central block joined to two smaller blocks to the north and south (this block alone remains) by enclosed passages was a great house in the best British tradition. In fact the layout of the whole plantation with its formal avenue of live oaks leading up to the central block before it was destroyed by fire during the War between the States, and the vast park with magnificent old trees, ha-ha and its grazing sheep is British in feeling.

In 1916 the estate passed to MR. J. J. PRINGLE SMITH, who, although he does not bear the name of MIDDLETON, is a direct descendant. He, with his talented wife, restored the garden to its former state as it suffered badly after the Civil War and the earthquake of 1886. The terraces and lawns were remade, the butterfly lakes dredged and restored to placid reflecting pools, and the whole garden returned to the well-groomed, cared-for appearance which it had enjoyed in the great days of its history. In addition they planted a whole hillside above what is known as Rice Mill Pond with azaleas, totalling some thirty thousand plants and developed at the extreme north end of the garden a small lake, typical of the kind of natural gardening we have already witnessed.

The original house stood on a long raised terrace on the axis of the main avenue on the east side. To the west there was and there still is a broad formal layout with a parterre with loose hedges of flame-coloured azaleas and a wide central path flanked by perfectly kept lawns. Beyond, there are six descending grass terraces, moulded in subtle sweeping curves by HENRY MIDDLETON's task force of one hundred men in the middle of the eighteenth century. On the lower terrace, which is very broad and tapers to a blunt point where it reaches the river, there are two butterfly-shaped reflecting pools of a scale suitable to the sweep of the terrace and the vastness of the surrounding landscape. They are separated by a broad grass alley which carries on the feeling of the central axis of the path on the upper terrace and leads the eye to the river, which continues on this same axis carrying the eye through the lovely marshes to distant woodland. It is a magnificent view with a colourful foreground full of interest, a broad middle distance and a romantically beautiful low horizon.

On the top terrace on either side of the central lawn are formal shrubberies and here are found what are believed to be three of the original camellia trees brought to the United States in 1783 by ANDRÉ MICHAUX, the distinguished French botanist. The varieties include 'Reine des Fleurs', 'Christmas Cheer', and one that is said to be a parent of the lovely red 'Professor Sargent'. There is a fourth tree, probably a root sport of an original 'Alba Plena', which was planted by MICHAUX at the same time.

To the south of this great system of terraces is the attractive Rice Pond, an elongated lake starting by the old Rice Mill which stands near the river and extending back between flowered banks, past the house and into the woods beyond. An interesting rustic bridge, showing Japanese influence in its graceful curve, crosses it and there is a charming path which leads from it through the azaleas on the hillside back to the Rice Mill. Beside it is the Moonlight Garden devoted entirely to white flowers and especially to those which are fragrant and night-flowering. Jasmine, gardenias, white azaleas, narcissus and white violets are a few of the many lovely plants.

The visitor usually enters the garden on the site of the old house, seeing the great sweep of the central vista and then entering the formal

FIG. 85—*Paeonia lutea* var. *ludlowii*. A painting by Miss Lilian Snelling prepared for the *Botanical Magazine* from a plant at Highdown (see p. 298)

FIG. 86—The Cypress Gardens. Evergreen azaleas against a background of trees covered with Spanish moss. These are seen to great advantage from a boat

Photos: Samuel Chamberlain

FIG. 87—The Cypress Gardens. An enormous tree of the flowering dogwood *Cornus florida*. In foreground is the base of a tall swamp cypress

FIG. 88—The Cypress Gardens. Azaleas on the banks of a lagoon (see p. 303)

FIG. 89—Base of giant swamp cypress mirrored in the dark waters of the lagoon with flame-coloured azaleas in the background (see p. 303)

FIG. 90—The Magnolia Gardens. An enormous evergreen oak draped in Spanish moss with azaleas below and a Banksian rose covering a group of shrubs

FIG. 91—Evergreen azaleas and a big oak (see p. 306)

FIG. 92—A bridge with the Cherokee rose covering a tree and in the foreground a Banksian rose with azaleas
(see p. 308)

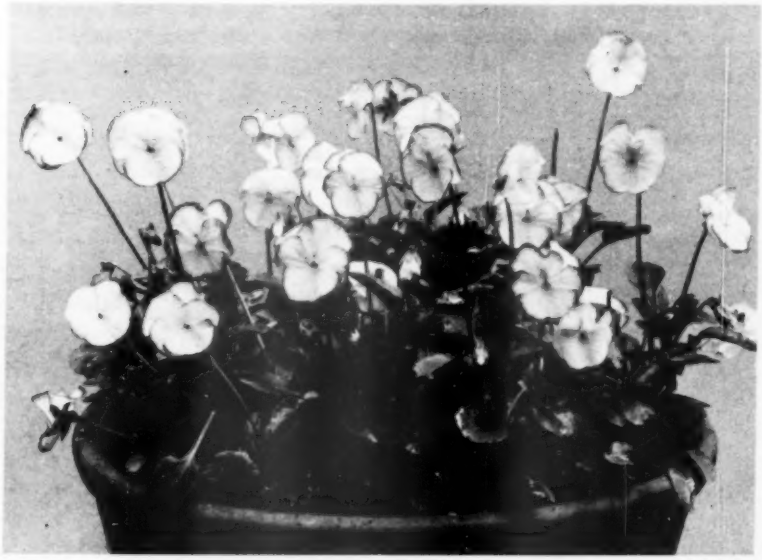

FIG. 93—Violetta 'Duchess' (see p. 325)

Photos: 'Amateur Gardening'

FIG. 94—Violetta 'Yellow Bird'

FIG. 95—Freesia 'Fantasy' A. M. March 22, 1960. A remarkable new double-flowered variety raised by Mr. J. A. M. Goemans and shown by Messrs. Parigo Horticultural Co., Ltd. (see p. 326)

gardens to the north. Here there is an elaborate geometric plan incorporating the old family tomb and camellia alleys which have become long floral tunnels under the huge bushes. From December until April they are covered with flowers and the path underfoot is often red and pink with petals. In this area there are a series of gardens, one supposedly secret, a sundial garden with the radial paths laid out on the eight points of the compass, a long formal reflection pool with a magnolia walk beside it and a classical marble figure of a wood nymph by an Italian sculptor, SCHADOW, beautifully placed so that it stands out against the dark waters of Azalea Pond with its setting of live oaks and brilliant azaleas.

In this area there are many plants of note, including a camellia tree nearly 30 feet tall and another with a stem 5 feet 3 inches in circumference, both of which are supposed to establish records in the United States. There is another giant camellia which has a trunk the base of which at ground level for all the world resembles an elephant's foot both in shape and colour. There is a very fine specimen of mountain laurel (*Kalmia latifolia*) of tree-like proportions with a trunk more than a foot in diameter, and there is the tremendous live oak mentioned earlier.

There are endless other specimens and plantings worthy of description, but it is the atmosphere of this garden that is most noteworthy with its wonderful formal layout conceived over two hundred years ago, its perfect integration with the river landscape, its brilliant utilization of a few natural slopes, uncommon in this flat country, and its feeling of permanence and calm. It is claimed to be the oldest landscaped garden in America. For that I cannot vouch, but it certainly gives the feeling of history, and of having been loved and venerated through the years. Lastly, to an Englishman it will echo other great gardens at home—not that it is imitative, not that the topography or the climate or the native flora is the same. But surely it stems from the great British eighteenth-century tradition in its architecture, in its layout and in the love with which it has been preserved.

THE USES OF MODERN INSECTICIDES IN THE GARDEN

P. Becker, B.Sc., Ph.D.

(*Lecture given on February* 9, 1960, DR. H. V. TAYLOR, C.B.E., V.M.H., *in the Chair*)

WE are constantly being told in the Press, on radio and on television that we are now in the Scientific Age. This is an inescapable fact which applies no less in horticulture than in other walks of life, and as far as the control of pests and diseases is concerned the apt sub-title

would be the Age of Chemicals. Gone are the days when the gardener had to rely for pest control on laborious and inefficient methods such as trapping and collecting by hand, and on a few messy, and often extremely poisonous chemicals which were laboriously mixed and strained, only to find that they washed off the plants with the first heavy shower of rain.

Nowadays, in horticultural sundries shops and in the big chemists we are met with a vast array of chemicals, nicely packed with multi-coloured labels, ready to use with the minimum of trouble, and capable of dealing death to the great majority of pests.

The age of modern insecticides dates from the discovery of DDT just before the last war. This was the first material made by man specifically for insect control. Since then every large chemical firm has come into the field and between them have produced, and are still producing, large

GROUP
NO.
MINISTRY OF AGRICULTURE AND FISHERIES
DEPARTMENT OF AGRICULTURE FOR SCOTLAND
This product is guaranteed by
to conform to a standard approved by the Ministry and the Departments for preparations to be used for the purposes given on this container and is included in the approved list under the
CROP PROTECTION PRODUCTS APPROVAL SCHEME

Text Fig. 1. The sign on the label of an officially approved product.

numbers of new materials aimed at controlling pests. Fortunately, only comparatively few have appeared on the market but the trouble is that, though most of these have been given perfectly good common names, they are sold by different firms under their own proprietary names. When this is combined with high-powered publicity (not always accurate) about the wonderful results achieved by these products, the result is that amateur growers, and many professionals too, are left in a state of complete bewilderment, not knowing what to believe and still not really knowing one insecticide from the other.

There is however, one way by which the public can recognize a reliable insecticide for what it is. The Ministry of Agriculture run an Approval Scheme which examines products voluntarily submitted by the manufacturers together with their labels. If the product is of a prescribed standard of efficiency and the claims on the label justified the product is approved and will bear the distinctive mark of the Scheme on its label (Text Fig. 1). In most cases these labels also state what the product contains. Therefore, if the grower wishes to be certain of buying a reliable product he would do well to buy only those which are officially

approved. This is not to say, however, that materials which do not bear the approval mark are necessarily inefficient, but it would be advisable to use these only on a trustworthy recommendation. It should be remembered too that, owing to the time needed to examine them, official approval of new materials may be delayed.

Insecticides can kill pests in a number of ways. The contact insecticide acts when the pest is hit by it or walks over the residue left on the surface. Stomach poisons kill when they are eaten along with treated plant material and systemic insecticides are poisons which are absorbed into the sap and carried to all parts of the plant. Fumigants give off a poisonous vapour or a gas which enters the breathing system of the pest. Most modern insecticides combine two or more of these properties and many of them are very persistent, remaining active for considerable periods of time. They can be applied in different ways, as dusts or sprays and, for greenhouse use, as smokes or mists.

Most of the commonly used synthetic insecticides fall into two chemical groups. The first group I wish to deal with consists of the chlorinated hydrocarbons.

Of these *DDT* is probably the best known. It has now been in use for some twenty years and is still the most popular of the modern insecticides. It is persistent, acts as a contact and stomach poison and is very effective against most biting pests such as Caterpillars, Beetles and Weevils. Also controlled are Thrips, Whitefly adults, Capsids and Leaf-hoppers. Against Aphids it should only be used in the emulsion form.

BHC is also well known. It is a contact and stomach poison, not as persistent as DDT but acts more quickly. It is commonly used against Earwigs, Woodlice, Thrips, Capsids, Leaf-hoppers, Whitefly adults and Aphids. Since it also has slight fumigant properties it was also used to control soil pests. BHC suffers, however, from the disadvantage that it causes tainting of vegetables and ripening fruit. *Gamma-BHC* or *Lindane* was introduced to combat this defect. This is a more potent form of BHC which controls the insects mentioned above and also Leaf Miners. It is less likely to cause tainting but even so it should not be used on ground where root crops or potatoes are to be grown in the next 18 months. Also, Lindane should never be used on currants or vines.

DDT, BHC and Lindane are all available as dusts, sprays or smokes.

Because of the risk of tainting by BHC and Lindane they are quickly becoming superseded by *Aldrin* as a soil insecticide. Aldrin acts in the same ways as BHC but is much more persistent in the soil and does not cause tainting. If the dust is forked into the top 4 inches of soil it controls Wireworm, Leatherjackets, Chafer and Weevil grubs and other soil pests. Where it is not possible to use dusts as, for instance, around the roots of established plants, the material can be used in liquid form. Aldrin can also be used to eradicate Ants and to protect plants against attack by Cabbage Root Fly and Onion Fly. Narcissus bulbs dipped in

a solution of Aldrin for 15 minutes are protected against Bulb Flies for about 2 years.

Dieldrin is closely related to Aldrin chemically but has no fumigant effect. It is obtainable only in liquid form or as a seed dressing and is used mainly in agriculture. However, it gives excellent protection against Cabbage Root Fly if used as a root-dip or drench. It may also be used as a dip for bulbs in the same way as Aldrin.

While none of the above-mentioned materials are very harmful to man it must be emphasized that their toxic effects are cumulative, DDT and Lindane should, therefore, never be applied to edible crops which are due to be harvested within 2 weeks. For Aldrin and Dieldrin a 3-week interval should be allowed.

A new chlorinated hydrocarbon recently introduced is *Kelthane*. This controls both the eggs and active stages of the Glasshouse Red Spider Mite and Cyclamen Mite and is a slow-acting but persistent material. Its use is restricted to greenhouses since, to be fully effective, it must be used at temperatures of at least 65° F. Being a new chemical it is not yet available in small quantities suitable for the amateur.

The second group of insecticides, the organo-phosphorus materials, includes many which are extremely poisonous to man and require protective clothing when handling them. These are not normally available to amateurs and it is not my intention to deal with them in this lecture. Many of the chemicals are extremely efficient, however, and I am glad to note that there is a tendency for the newer materials in this group to be less dangerous. Nearly all the systemic insecticides belong to this group.

Up to the present, the only organo-phosphorus material which can be purchased in small quantities is *Malathion*. This is an extremely efficient contact insecticide for use against Thrips and Aphids. Two or three applications at 14-day intervals will control Whitefly, Scale Insects and Mealy Bugs. Malathion also kills the active stages of Fruit Tree Red Spider Mites and Gooseberry Red Spider Mite, and two or three applications will control infestations of these pests. Root Aphids and Root Mealy Bugs can be checked by applying a root drench of the solution but for complete control of these stubborn pests it is best to lift the plant, wash the roots and replant in clean soil after spraying or dipping in a solution of Malathion. Rubber gloves should be worn when handling the concentrate but the chemical is safe in the diluted form and edible crops which have been treated can be safely eaten a week afterwards.

As I mentioned in the January issue of the R.H.S. JOURNAL three promising new organo-phosphorus materials have appeared on the market for the commercial grower. They are quite safe to use but as they are still in the proving stage it may be some time yet before they are made available in small quantities.

Diazinon is similar in its effects to the much more dangerous Parathion, i.e. it is a contact insecticide which has the power of penetrating from one side of a leaf to the other and is therefore useful against Leaf-

Miners and pests which protect themselves inside curled and distorted leaves. Thrips, Aphids, Scale Insects, Mealy Bugs and the active stages of Red Spider Mites are among the pests controlled by this chemical. Two weeks should elapse before harvesting treated vegetables and fruit.

Dimethoate ("*Rogor*") is the first "safe" systemic insecticide which can be used on edible crops. Used mainly on fruit so far, it gives a quick kill of Aphids, Apple and Pear Suckers, and the active stages of Red Spider Mites. Treated fruit can be picked 7 days afterwards.

Phenkaptone has been proving very effective against the Fruit Tree and Gooseberry Red Spider Mites, killing both the summer eggs and active stages. It may also prove useful against the Glasshouse Red Spider Mite but experience with the latter species is limited so far.

Having disposed of the two main groups of insecticides there remain several miscellaneous materials which deserve mention.

The summer ovicides, which include three chemicals, *Fenson*, *Chlorfenson* and *Chlorbenside*, are used to kill the eggs and young stages of Red Spider Mites. To control an infestation at least two applications are necessary with a 10-day interval under glass, and a 3-week interval out of doors. However, if one of these materials is used together with Malathion or Derris only one application may be necessary.

Another material which kills the eggs of the Glasshouse Red Spider Mite is *Azobenzene*. This is applied as a smoke and should be used at temperatures between 60° F and 80° F. At least two applications at an interval of 10 days are necessary to obtain full control.

Finally, there is the systemic insecticide *Fluoroacetamide* which is probably more familiar by its proprietary name of "Tritox". This liquid can be applied as a spray or a root drench to kill Aphids, the poison being carried in the sap to all parts of the plant. Its use is restricted however, to non-edible plants.

Having given details of these various materials the question is bound to arise in the mind of the average gardener, "How many of these insecticides should I buy?", and I have many times been asked what is the smallest number of insecticides considered necessary to have readily at hand in the average garden. The answer of course depends on the types of pests which are prevalent in a particular area but the great majority of pests can be dealt with adequately with four materials:

(1) *DDT*, for Caterpillars, Beetles and their grubs, Capsids, Leafhoppers.
(2) *Lindane*, for Woodlice, Aphids, Thrips, Earwigs, Sawfly larvae and Leaf Miners.
(3) *Malathion*, for Thrips, Aphids, Scale Insects, Mealy Bugs and outdoor Red Spider Mites.
(4) *Aldrin*, for most root-feeding soil pests.

Alterations in the above list can be made to suit individual requirements. For instance, if Red Spiders, Scale Insects and Mealy Bugs are not troublesome, Lindane may be found adequate for Aphids and

Thrips and is cheaper than Malathion. Conversely, if Glasshouse Red Spider is a problem, it may be necessary to add to the list Derris, Azobenzene or a Summer Ovicide.

DDT and Malathion can be mixed together for use on plants which, for instance, may be infested by Aphids and Caterpillars at the same time. Lindane can also be mixed with either of these materials. Such mixtures can be bought ready-made and are often advertised extravagantly as garden cure-alls but, in most practical instances, it is both unnecessary and wasteful to use these mixtures.

I should like to enumerate a number of rules which should be kept in mind by all who use insecticides.

(*a*) Read the label carefully before buying and before use, making sure it will do the job you require. The instructions should be followed closely particularly with regard to the concentrations to be used and the plants to be avoided. Concentrations higher than recommended may damage plants.

(*b*) Avoid spraying open flowers which are likely to be visited by bees and other pollinating insects.

(*c*) Some sprays and smokes cause damage to plants if applied in hot bright sunlight. Treatment should be given in dull weather or in the evening. Conditions should be calm to avoid the drift of insecticides to open flowers or edible crops ready for picking.

(*d*) When using smokes ensure that the greenhouse is air-tight. The temperature should be above 60° F. for best results. Never fumigate plants which are dry at the roots.

(*e*) After using insecticides wash hands and utensils carefully and place containers out of the reach of children.

(*f*) Utensils used for mixing and applying hormone weed-killers should not be used for insecticides. Even after careful washing traces of weed-killers can remain to cause serious damage to plants.

I shall conclude with a short word of warning. While it is possible with modern insecticides to obtain a good control of most garden pests, this can seldom be done without at the same time killing large numbers of the beneficial insects which are responsible for some degree of natural control of pests. There is nowadays a regrettable tendency to forget this and to reach for the sprayer at the least excuse. Prevention is better than cure and serious trouble can often be prevented by the observance of the rules of good gardening. Digging and hoeing get rid of weeds which provide food and shelter for many pests, and help to expose underground larvae to the elements and to birds, and a tidy garden will harbour fewer pests than one which has patches of tangled vegetation or where piles of rubbish, plant remains and prunings are left lying about. Insecticides should only be considered as a last resort to be used against pests which get out of hand or which you know from previous

experience are likely to be troublesome in spite of all other precautions you might take. If these rules are not followed it will be found that you will have to rely more and more on insecticides as a means of control and these are not cheap items in the gardener's budget.

BRITISH EXHIBIT AT THE GHENT FLORALIES

THE famous Ghent Quinquennial International Flower Show was held from April 23 to May 2, and the United Kingdom was represented by a co-operative exhibit staged under the auspices of the British Committee for Overseas Flower Shows. The Council, being of opinion that every effort should be made to maintain the prestige of the United Kingdom at such important international shows, readily consented to co-operate with the Committee by placing at its disposal the services of the Curator of the Gardens, who was responsible for planning the exhibit, timing many of the plants, transporting the plants and finally supervising the staging of the exhibit. The services of a number of other members of the garden staff were also made available to help with the preparatory work and, finally, with its dismantling and return. Most of the plants were lent by twenty-four amateur gardeners and nurserymen but a considerable quantity were supplied from our gardens at Wisley.

The exhibit, which occupied just over 4,000 square feet, took the form of a woodland garden with a water-fall and stream, and was bisected by a wide path 220 feet long, which crossed the stream just below the water-fall. The source of the water was 8 feet high amidst rocks and was flanked by Kurume azaleas backed by tall rhododendrons which gave depth to the miniature gorge. The stream tumbled through a series of pools, and passing under the bridge followed a course among Asiatic primulas, hostas, astilbes, ferns and water-side plants overhung by weeping willows. The other side of the path was furnished with conifers, oaks and silver birches, underplanted with rhododendrons and other shrubs, polyanthuses, etc. One of the rhododendrons in the exhibit, a hybrid between *R. yakusimanum* and R. 'Pilgrim', raised at Wisley and named 'Lady Bowes Lyon', won the prize offered for the best new plant in the Show. Another rhododendron hybrid, named 'Ethel' and raised at Bodnant, was judged to be the best rhododendron in the Show. Other individual plants or groups of plants in the British exhibit won first prizes, and the exhibit as a whole gained the Diplôme de Grand Médaille with felicitations and acclamations.

AWARD OF GARDEN MERIT—XCV

443 CAMELLIA × WILLIAMSII 'DONATION'

Award of Garden Merit, April 15, 1958

The various single-flowered forms of *Camellia* × *williamsii*, such as *C.* × *williamsii* 'J. C. Williams' which originated at Caerhayes Castle in Cornwall, were becoming well known when the late COLONEL STEPHENSON R. CLARKE, C.B., of Borde Hill, Hayward's Heath, showed on March 25, 1941, a similar hybrid with large soft pink double flowers. This hybrid which was stated as being *C. saluenensis* × *C. japonica* 'Donckelaari' roused great interest and admiration, and received an Award of Merit as a hardy flowering shrub. It has glossy leaves which show affinity to those of *C. japonica* while the flowers, some 5 inches across, not tightly double but somewhat like those of a double herbaceous paeony, are of the same soft pink with a tinge of blue peculiar to *C. saluenensis*. Like this species, *C.* × *williamsii* 'Donation' sheds its dead flowers.

Familiarity with *C.* × *williamsii* 'Donation' has increased the admiration it roused on its first appearance. Old plants are now well over 8 feet high and season after season cover themselves with a profusion of flowers for a period of months in early spring. It is easily propagated, and young plants, whether in pots or planted in the open, flower with the same freedom as mature plants. It does, however, require the shelter of a woodland garden as it has shown itself to be bud-tender in frost pockets. Like other camellias it requires a lime-free soil.

The flowers of *C.* × *williamsii* 'Donation' do not show up to their best in the exhibition hall or show tent. Their true value can only be assessed in the open. It is illustrated in R.H.S. JOURNAL, **80**, p. 544, Fig. 119.

444 FUCHSIA 'MRS. POPPLE'

Award of Garden Merit, April 15, 1958

Varieties of fuchsia which are really hardy are not numerous, but F. 'Mrs. Popple', raised as long ago as 1899, is known to have survived for twenty years or more in Worcestershire. When it received an Award of Merit on October 9, 1934, it was shown by Messrs. Clarence Elliott, of Stevenage, Hertfordshire, an area not usually included in the milder counties. Now after so many years it has received an Award of Garden Merit which it deserves not only as a hardy fuchsia but also as an attractive garden plant, flowering generally from June to the first hard frosts.

The flowers with coral-red sepals, 1 inch long, and purple corollas, hang gracefully from slender arching growths. It is a vigorous plant, and even if cut to the ground in hard winter, sends up fresh, strong

growth from the base. In colder gardens a thick mulch of ashes or peat moss is a great help in keeping off the ill effect of heavy frost.

As for cultivation, 'Mrs. Popple' is not particular as to soil and will flower well in shade, say at the base of a north wall, as well as in full sun. Cuttings of the new season's growth, if taken early, not only root readily but have time to become established and to grow away before winter sets in.

445 MALUS × ROBUSTA

There is some confusion as to the origin of *Malus* × *robusta*. REHDER considers it to be a hybrid of *M. baccata* × *prunifolia*, and such a hybrid origin would account for the variation in plants grown under this name. It is quite distinct from *M. sieboldii*, and *M. toringo* which is in fact a synonym of *M. sieboldii*, though it has been sent out under both names. At the Arnold Arboretum seedlings of this cross have been raised and it is interesting to note one of these, their No. 5, is being used experimentally as a dwarfing stock for ornamental trees, in the hope of producing ornamental trees of compact habit suitable for small gardens.

Malus × *robusta* forms eventually a broad-headed tree, grafted trees having first rather a pendulous habit. The white flowers are produced in April, and though they are agreeable, it is for the fruits which succeed them that the Award was made. These are on long stalks and are like large, bright red cherries with all their gloss. Furthermore they persist well into January or even February and this is its chief merit.

Malus × *robusta* appears to be quite hardy and is not particular as to soil.

446 PRIMULA VULGARIS

Award of Garden Merit, January 13, 1959

For generations writers and poets have written of the common primrose, which is scientifically *Primula vulgaris*. Now it has been honoured with an Award of Garden Merit.

Those who live in districts where each spring, copse, hedgerow and open woodland are carpeted with primroses, may not bless its habit of seeding itself amongst their choicest small treasures, but cannot deny its attraction, particularly if it is left to flourish where the grass is kept long, perhaps in the orchard or amongst shrubs. The less fortunate whose districts the primrose shuns, will find it fairly amenable to cultivation, resistant to some drought and neglect, not coarsening on the richer diet of cultivation, but not so long-lived as in the wild and requiring replacing from time to time. It seems, in the wild to avoid light, sandy soils and chalk, preferring heavier loam and clays where from February onwards it opens its pale yellow flowers.

447 PRUNUS 'PANDORA'

Award of Garden Merit, May 5, 1959

Amongst the early cherries of spring are two of exceptional charm; ***Prunus subhirtella*** and ***P. yedoensis***. The former varies considerably and has flowers either single or double, which range from nearly white to purple-pink. These flowers are, in spite of their apparent delicacy of texture, most weather resistant. ***P. yedoensis*** which is widely planted in Japan and thought to be perhaps of hybrid origin, owing something to ***P. subhirtella***, has simple flowers of pale pinkish white. Both are small-leafed in comparison with Japanese cherries or the earlier flowering ***P. sargentii***.

Messrs. John Waterer, Sons & Crisp, of Bagshot, crossed these two cherries, naming the offspring 'Pandora'. This outstanding hybrid is most generous with its soft pink single flowers about 1 inch across which are carried on the bare twigs and most resistant to bad weather. It has an excellent constitution and its pronounced upright habit recommends it for every size of garden. It is not fastidious as to soil. It received an Award of Merit in 1939.

448 PRUNUS 'SHIROFUGEN'

Award of Garden Merit, July 7, 1959

There are numerous varieties of April-flowering Japanese cherries which may bewilder the would-be planter, but *Prunus* 'Shirofugen' (***serrulata albo-rosea***) commends itself particularly as it is one of the last varieties to flower.

It forms eventually a wide-spreading tree up to 30 feet high. The flowers are in loose, pendulous corymbs on very long peduncles. They are pink in bud, later becoming white and becoming pink again as they age, and they never develop before the foliage is well advanced. Herein lies *P.* 'Shirofugen's' great attraction, for the young foliage is coppery-pink, contrasting delightfully with the flowers.

Like those of many Japanese cherries the leaves of *P.* 'Shirofugen' colour well in the autumn. It prefers a rich, neutral loam, but these are good specimens on the acid soils of the South-west and on the Chalk.

It was given an Award of Merit when shown by Messrs. John Waterer, Sons & Crisp, of Bagshot, in 1951.

THE VIOLETTAS

Howard H. Crane, F.L.S.

WHAT are Violettas? Most growers of hardy plants know, vaguely possibly, that they are some kind or strain of small violas or pansies, but are at a loss to give any more precise definition. With the difficult conditions that have existed over the past few decades this is perhaps hardly surprising; but before the turn of the century and for some years after they were popular little garden plants grown and distributed by some well-known nurseries of the day. Unfortunately the exigencies of World War I resulted in the loss of many varieties and a great deal of stock of these charming little pansies; but, in the years following, work on them was started afresh and they were again beginning to be recognized as valuable additions to the flower garden. With the advent of World War II they once more suffered a serious setback, and had it not been for the efforts of a few enthusiasts it is not unlikely that the strain would have been lost to cultivation, as has happened with not a few other garden plants.

In order properly to consider the plants and flowers known as Violettas it will be expedient, if not necessary, first of all to refer briefly to the development of pansies and violas as they are known today.

Although it seems evident that the heartsease (*Viola tricolor*) and the yellow mountain pansy (*V. lutea*) had been grown in gardens from the sixteenth century, it was apparently not until early in the nineteenth century—*circa* 1810–13—that systematic work was begun in the selection and cultivation of good forms of *V. tricolor* and subsequently other species. Progress in the raising and selection of improved forms seems to have been fairly rapid and within the next twenty years or so large numbers of plants with interesting and colourful flowers were raised. For instance in the *Floricultural Cabinet*, published in 1833, there are coloured illustrations of some of those which were highly thought of at the time. Between the years 1835 and 1838 there was issued—in twenty-four parts—a publication with the somewhat lengthy title *A History and Description of the Different Varieties of the Pansey* (*sic*) *or Heartsease now in Cultivation in the British Gardens*. Hand-coloured lithographic plates are an interesting feature of this publication.

As time went on, the blossoms of these cultivated pansies, to achieve merit in the eyes of the plantsmen of the day, had to conform to certain fixed standards of shape and markings; what subsequently became known as Show Pansies were thus developed. Very briefly the flowers of Show Pansies had to be of circular shape, mainly self colours but sometimes margined with a darker tint, with small dense markings in the centre of the flower on the three lower petals. There are very few named varieties of Show Pansies grown nowadays and these mainly north of the Border. In many a cottage garden throughout the country,

however, blossoms of pansies indicating Show Pansy influence are still to be seen.

Now these fixed standards, with the somewhat limited colour range allowed, did not suit or please everybody. The interest of continental growers had already been aroused and so began the development of strains and varieties of brilliant colouring as opposed to the more restrained colours and markings of the Show Pansies. Growers both here and on the Continent went all out for brightness and resplendence in colour. As time went on there were evolved varieties with large velvety flowers, good specimens or types of which in their turn had to conform to certain recognized standards; in due course they became known as Fancy Pansies. A good type of Fancy Pansy is readily distinguished by the large dense "blotch" of deep colour which almost covers the three lower petals, leaving a broad belt of a lighter colour on the margins. The blossom should be circular, of good proportions, with petals of stout substance and texture lying as flat as possible, the top edge of the bottom petal being horizontal. A limited number of named varieties of Fancy Pansies—vegetatively propagated of course—are still grown in Scotland and the North. There are some good types of Fancy Pansy, too, grown from seed and treated as annuals or biennials. Many firms, both in this country and on the Continent, have their own special strains; the beds in which the seed parents are grown are carefully rogued in order that the strains may be kept true to type. A few years ago in the Wisley Gardens there was a trial of pansies grown from seed; it evoked a deal of interest.

Whilst the work of developing Fancy Pansies was going on a small band of enthusiasts was busy trying not only to increase the colour range of the Show Pansies but also to raise plants with a neat habit of growth and of free-flowering character. With such objects in view these workers hybridized existing varieties of Show Pansies—or bedding pansies as they were evidently sometimes called—with species such as *Viola cornuta*, *V. altaica*, *V. amoena* and others. Numbers of interesting seedlings were the outcome, some being free of markings in the centre of the blossom and apparently most of a relatively tufted habit of growth. Many well-known gardeners of the time, both amateur and professional, were interested in this work. JAMES GRIEVE, who raised the apple named after him, was one. Eventually these new types of pansy became known alternatively either as Tufted Pansies or Violas, the latter description taking the generic name *Viola* apparently because they were in the first instance derived from certain species of the genus; but this is not certain. WILLIAM ROBINSON always referred to them as Tufted Pansies in forthright manner in the *English Flower Garden* and his other publications. Although his efforts did not meet with unqualified success the term Tufted Pansies was in common use up to the first decade of the present century; it is but little used nowadays.

So great was the interest aroused by these new Tufted Pansies or Violas that conferences were held in 1894, 1895 and 1896, the first two

at the Botanical Gardens, Birmingham, and the last one at the Botanic Gardens, Regent's Park. As one writer of the time put it: "A great wave of popularity for the Viola is passing over the country". He was certainly right, for they were grown in gardens, large and small, throughout the land where soil conditions made their culture at all possible. As many of the older generation will remember, up to the time of World War I and for some years afterwards they were planted extensively in beds and borders of private gardens and public parks *en masse* for colour effect, and great was their popularity. These were the days of named varieties; they had to be good, too, and were far in advance in every way of the kind of flower usually obtained from a packet of mixed seed nowadays. There are still some of these older bedding varieties in cultivation and distributed by nurserymen, particularly in the North. A few are 'Admiral of the Blue', 'Mrs. Chichester', 'Maggie Mott', 'Pickering Blue', 'Primrose Dame' and 'White Swan'. Nowadays a number of firms, both here and on the Continent, grow their own special strains of characteristic markings and tints, which they distribute to be grown from seed. Regular roguing is essential in order that the particular strain may keep its distinctive character.

And so we come to the Violettas. Amongst those interested in the 'seventies in the raising of new types of pansy with a tufted habit and a free-flowering propensity was a certain DR. CHARLES STUART, of Chirnside, Berwickshire. Many beautiful Tufted Pansies or Violas came from his garden and were being distributed up to the first few years of this century and at least one is still catalogued. Some of these I remember from my boyhood days as he and my father corresponded and apparently exchanged plants. DR. STUART was emphatic in stating that in order to breed compact and close-growing varieties the cross should be made with *V. cornuta* as the seed-bearer. Because of DR. STUART's work in raising new types of Tufted Pansies or Violas the name *V.* × ***stuartii*** was proposed in 1939 as a group name or collective designation for all the hybrids derived from *V. cornuta* crossed with the garden pansy (*V.* × ***wittrockiana***); but an earlier name for the same group is *V.* × ***williamsii*** Wittrock (1897).

In a letter to the late WILLIAM CUTHBERTSON, then of the firm of Dobbies, DR. STUART put on record that in 1874 he "took pollen from a garden pansy named 'Blue King', a bedding variety then in fashion, and applied it to the pistil of *Viola cornuta*, a Pyrenean species. There was a podful of seed which produced twelve plants, which were well taken care of. The next season they flowered and were all blue in colour, but with a good tufted habit. I again took the pollen from a pink garden pansy and fertilized the flowers of my first cross, with a limited success. The seed from this cross gave me more variety in colour of flower, and the same tufted habit of growth, which evidently came from the *Viola cornuta* influence. The best of this cross were propagated and grown, some of the plants being sent to The Royal

Horticultural Society's Gardens at Chiswick for trial." DR. STUART was informed that they were entirely different in growth from all the others sent in. In the autumn of 1875 he was told that six first-class certificates had been awarded. Nothing more was done at this time beyond growing the plants already raised and sowing the seed from them and it was over twelve years before the first Violetta came on the scene. To quote again from DR. STUART: "In the year of the Queen's Jubilee, while walking round the seed-bed I saw what I had been seeking for, a pure white rayless Self. The plant was there and then pulled to pieces and every bit propagated. It was a warm summer night, and the perfume of the blooms at once attracted by attention. The next season I had a little plantation of the rayless Self and a wealth of blooms. A box of them was sent to Mr. Robinson the Editor of *The Garden*, who at once recognised a new strain." DR. STUART named his seedling 'Violetta'. This, and subsequent seedlings of DR. STUART'S, WILLIAM ROBINSON popularized in his publications, such as *The Garden*, *Gardening Illustrated* and *Flora and Silva*. GERTRUDE JEKYLL also became interested in them. 'Violetta' itself is a dainty flower, about 1 inch across and 1½ inches from top to bottom, of pure white with the bottom petal heavily suffused creamy yellow; the petals are of stout substance.

At the Viola Conference of 1894, previously referred to, a paper by MR. GEORGE STEELE was read on *The Violetta, or Miniature Varieties*. Rules were then drawn up defining the "properties", as they were called, or characteristics of the kind of flower and plant that a Violetta should possess. Concisely they are as follows: "the shape of the flowers to be circular, or narrow and oval, with the petals smooth and of good substance; the colour to be bright and clear with no central ray or marking; the flowers to be highly perfumed; the size not to exceed 1½ inches in diameter; the habit to be dwarf and procumbent, foliage small, joints short, habit bushy with blossoms held erect on their footstalks. The older Violettas that I remember were about 1 inch by 1¼ inches but some were circular, about 1¼ inches across. At least one of DR. STUART'S own violettas is still catalogued. i.e. 'Queen of the Year', china-blue flecked white; 'Lyric', lilac marbled lavender, is, I think, another. The original Violetta was still available two or three years ago.

My father, the late D. B. CRANE, raised many charming varieties of Violettas and corresponded with WILLIAM ROBINSON about them; in 1908 *The Garden* published a delightful colour plate of some half a dozen. I look back with pleasure and a certain amount of pride to the pricking out of hundreds of seedlings in our garden at Highgate in the years prior to 1914. My father carried on with the work and many interesting varieties were the outcome, some of which were exhibited at Vincent Square from time to time. Rooted cuttings of one, which made a chubby little plant during the season, I gave to a well-known plantsman; he changed the name to 'Buttercup' and distributed it all over the country! It has deep orange yellow blossoms freely borne and is still catalogued today. It was on a table rock-garden stand at Chelsea a few

years back. The firm of Dobbies acquired the stock of several varieties and at the Chelsea Show of 1938 planted up a charming formal garden with masses of plants in several distinct masses of colour.

In subsequent years it has been my pleasure to carry on with the cultivation of Violettas and the preservation of the strain. A few have been distributed through trade channels. 'Duchess' (Fig. 93), yellow margined lavender, and 'Tom-Tit', deep mauve blue are two interesting kinds.

As with their relatives pansies and violas, due to the structure of the flower, Violettas do not come true from seed so that in order to perpetuate any particularly attractive seedling vegetative propagation by cuttings or division of roots is essential. Nowadays it seems that, with few exceptions, nurserymen do not find it an economic proposition to distribute plants of named varieties of the pansy family, propagated from cuttings, as was the practice years ago. It is a pity. Nevertheless, provided the seed parents have been carefully selected from a bed of seedlings by knowledgeable plantsmen who really know what to discard —and are prepared to do so—the progeny from seed should be reasonably true to type and strain.

It must be emphasized that with Violettas grown from seed thorough roguing is essential if good results are to be expected; only in this way can the strain be kept true to type. It would be a pity if through failure to do this work efficiently the strain were lost. The same applies, of course, to strains of many other good garden plants grown from seed.

One of the charms of the Violettas is the delightful fragrance of the flowers. The scent from masses of blossoms, freely borne on each plant, pervades the morning air in spring and summer, and on warm evenings the perfume is likewise all-pervading.

There have been several types of small pansy raised over the years, some of which are hybrids of *V. cornuta*, but attractive as they may be this is not to say that they are Violettas; nor can they be classified as such, although sometimes so designated. There are, too, various forms of *V. cornuta* and also *V. gracilis* which partake both in shape of flower and habit of growth of these two species; they are not Violettas.

Because of the influence of *V. cornuta* in their make-up, Violettas may be regarded as alpines in character. Plants remaining in their flowering quarters for more than one season make charming circular-shaped even tufts of foliage in the spring; from these arise blossoms of delightful fragrance poised erect on dainty footstalks. They can be planted in the rock-garden where they can be relied on to give a good account of themselves after most of the other permanent occupants have come to the end of their flowering season. Indeed, within the last decade there have been a few colonies of Violettas in the small rock-garden at Wisley where they attracted considerable attention.

If our present-day rock-garden pundits could be persuaded to grow some of these Violettas I venture to suggest their culture would prove interesting and attractive.

PLANTS TO WHICH AWARDS HAVE BEEN MADE IN 1960

Chamaelaucium uncinatum A.M. March 22, 1960, as a cool greenhouse shrub. This evergreen Myrtaceous shrub is native to Australia where it is a popular garden plant. In this country it needs the protection of a cool greenhouse where it forms a somewhat lax, pendulous shrub about 6 feet tall. The evergreen, opposite, linear leaves are aromatic, rounded, about an inch long and $\frac{1}{16}$ inch wide with a hooked tip, suggesting an adaptation to a scrambling habit of growth. The flat, five petalled-flowers, about $\frac{3}{4}$ inch across were Beetroot Purple (H.C.C. 830/3) on the specimens shown but can also be pinkish or white. The prominent central disc with its ring of stamens and staminodes is filled with sticky, glistening nectar which surrounds the central ovary. Exhibited by The Director, The Royal Botanic Gardens, Kew, Richmond, Surrey.

Datura sanguinea A.M. March 22, 1960, as a cool greenhouse shrub. A native of Peru forming a shrub of from 4–8 feet in height with alternate, ovate, slightly undulate leaves about 7 inches long and 4 inches across, covered in white hairs. The large, pendulous trumpet-like flowers on petioles about 3 inches long are about 8 inches in length and 3 inches across and have an inflated calyx-tube about $3\frac{1}{2}$ inches long which is partially split into two segments for about one-third of its length. The corolla has five sharply recurved points at the mouth of the tube and from each point three prominent veins run towards the base of the tube. The pale green colour at the base of the corolla gradually changes to Chinese Yellow (H.C.C. 606) and about an inch from the mouth of the tube merges into Poppy Red (H.C.C. 16–16/1) suffused with Brick Red (H.C.C. 016). Exhibited by L. M. Mason, Esq., Talbot Manor, Fincham, King's Lynn, Norfolk.

Freesia 'Fantasy' A.M. March 22, 1960. A remarkable double flowered variety raised by Mr. J. A. M. Goemans as the result of a cross made in 1956 between two multipetalled Parigo hybrids. The very large Empire Yellow (H.C.C. 603/2) flowers measure 3 inches across when fully open and they have a very strong aromatic scent. The colour deepens towards the centre and the inflorescences borne on very long strong stems carry 5–7 flowers. Shown by Messrs. Parigo Horticultural Co. Ltd., Bourne Road, Spalding, Lincs. (Fig. 95).

Freesia 'Romany' A.M. March 22, 1960. A very pleasing double flowered variety resulting from a cross made by Mr. J. A. M. Goemans in 1956 between two multipetalled Parigo hybrids. The strongly scented, mauve, near Mineral Violet (H.C.C. 635/2) flowers have a white throat and a thin violet central streak on each segment. The prevailing colour deepens towards the edges of the flowers. The inflorescences borne on strong stems carry up to eight blooms which measure 2 inches across when fully developed. Shown by Messrs. Parigo Horticultural Co. Ltd.

Hippeastrum 'Crossbill' A.M. March 22, 1960. The large well-formed flowers of this attractive variety are bright carmine pink, near Spinel Pink (H.C.C. 0625) but brighter, with a white zone towards the base of the segments and a greenish centre. The scape exhibited carried three fine flowers. The parentage is given as 'Painted Lady' and ' Whitethroat'. Shown by the London County Council Parks Department (Chief Officer, Mr. L. A. Huddart, F.I.L.A., F.Inst.P.A.; Garden Manager, Mr. W. J. Hart), County Hall, Westminster Bridge, S.E.1.

Helleborus argutifolius (Syn. *H. corsicus*) **F.C.C.** March 8, 1960. A very handsome, sub-shrubby, evergreen hellebore, native to Corsica, Sardinia and the Balearic Isles which was given the Award of Merit in 1930 and has now gained the further distinction of an **F.C.C.** The thick leathery leaves, each consisting of three, serrate leaflets about 6 inches long and 2½ inches across and a petiole 6 inches long, are carried on 2-foot stems. The inflorescence is erect, branching and carries about twenty, nodding, cup-shaped flowers about 2 inches across and pale yellow-green in colour. Exhibited by Lord Aberconway and The National Trust, Bodnant, Tal-y-Cafn, N. Wales.

Pinus ayacahuite A.M. March 8, 1960, as a hardy, coniferous tree. The "Mexican White Pine" will grow to 100 feet or more in its native habitat and specimens of over 80 feet are known in this country. The narrow leaves, up to 6 inches long and 1 mm. wide on the specimen shown, were borne in fives from the dwarf shoots and were triangular in cross-section. The prominent, white stomatal lines on the undersides of the leaves give a silvery sheen to the tree enhancing the graceful, slightly pendulous habit. The large cones were up to 12 inches long and 3½ inches wide, with partially reflexed scales, and were carried singly, or in clusters of two or three, near the ends of the branches. Exhibited by Lord Aberconway and The National Trust.

Tulipa orphanidea A.M. May 3, 1960, as a variety for garden decoration. Species. Leaves channelled, linear, pointed, polished outside, glaucous within; flower stems 10 inches tall, slender; flowers 2 inches deep, diameter open 2 inches; inside of perianth segments Burnt Orange (H.C.C. 014) shading to deep olive-green at base; outer three segments Orange Buff (H.C.C. 507/2) on back, tinged with green towards base, $\frac{7}{16}$ inch wide tapering to a point; inner three segments ¾ inch wide, tapering to a point, deeply tinged with Burnt Orange on the back, but with a narrow yellowish zone at centre, where there is a prominent rib; tips of segments reflexed when flower is open. Shown by Mrs. Gwendolyn Anley, St. George's, Wych Hill Lane, Woking, Surrey.

NARCISSI

Narcissus 'Carinthia' A.M. May 3, 1960, as a show flower. Division 3b, single Narcissus. Stem 19–22 inches long. Flower 4 inches diameter, perianth segments 1 $\frac{11}{16}$ inches long, outer segments 1½ to 1¾ inches wide, inner segments 1¼ to 1½ inches wide, twisted, incurving, overlapping, slightly reflexed, blunt, white, stained yellow at base;

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NARCISSI

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corona 1⅛ inches diameter, 7/16 inch long, ribbed, mouth straight, frilled, margins crenate, Orange (H.C.C. 12). Raised and shown by J. M. de Navarro, Esq., Court Farm, Broadway, Worcestershire.

Narcissus 'Glacier' A.M. April 20, 1960, as a show flower. Division 1 (c), trumpet narcissus. Stem 17 inches long. Flower 5 inches diameter; perianth segments 2 inches long, 2 to 2¼ inches wide, flat, overlapping, pointed, white; corona 2⅛ inches diameter, 2¼ inches long, smooth, mouth expanded and frilled, margins serrated, white. Raised and shown by Mr. J. Lionel Richardson, Prospect House, Waterford, Eire.

Narcissus 'Irish Minstrel' A.M. April 20, 1960, as a show flower. Division 2 (b), large-cupped narcissus. Stem 22 inches long. Flower 4 to 4¼ inches diameter; perianth segments 1¾ inches long, 1⅝ to 1¾ inches wide, incurving, overlapping, slightly blunt to pointed, white; corona 1½ inches diameter, 8/8 inch long, ribbed, mouth expanded and frilled, margins serrated, a colour near Aureolin (H.C.C. 3). Raised and shown by Mr. J. Lionel Richardson.

Narcissus 'Masai King' A.M. April 20, 1960, as a show flower. Division 2 (a), large-cupped narcissus. Stem 19 inches long. Flower 4 inches diameter; perianth segments 1¾ inches long, 1½ to 1⅝ inches wide, flat, overlapping, pointed, Canary Yellow (H.C.C. 2); corona 1 3/16 inches diameter, ⅝ inch long, ribbed, mouth expanded and frilled, margins serrated, Orpiment Orange (H.C.C. 10). Raised and shown by Mr. J. Lionel Richardson.

Narcissus 'Purity' A.M. May 3, 1960, as a show flower. Division 2c, single Narcissus. Stem 22–25 inches long. Flower 4¼ inches diameter, perianth segments 1 11/16 inches long, outer segments 1½ to 1⅝ inches wide, inner segments 1¼ to 1½ inches wide, flat, slightly incurving, overlapping, very slightly inflexed, regular, toothed, white; corona 1 7/16 inches diameter, 1⅛ inches long, slightly ribbed, mouth slightly expanded, frilled, margins crenate, white. Raised by Mr. G. L. Wilson, and shown by Mr. M. J. Jefferson-Brown, 27 Swinbourne Gardens, Whitley Bay, Northumberland.

Narcissus 'Verona' A.M. April 20, 1960, as a show flower. Division 3 (c), small-cupped narcissus. Stem 20 inches long. Flower 3¾ to 4 inches diameter; perianth segments 1⅝ inches long, 1¾ inches wide, flat, overlapping, blunt to slightly pointed, white; corona 1¾ inches diameter, ½ inch long, ribbed, mouth expanded and frilled, margins slightly serrated, creamy white. Raised and shown by Mr. J. Lionel Richardson.

Narcissus 'Viking' A.M. April 20, 1960, as a show flower. Division 1 (a), trumpet narcissus. Stem 20 inches long. Flower 4½ inches diameter; perianth segments 2 inches long, 1⅛ inches wide, slightly twisted, overlapping, pointed, a colour near Canary Yellow (H.C.C. 2); corona 1⅝ to 1¾ inches diameter, 2⅛ inches long, slightly ribbed, mouth expanded and frilled, margins serrated, Lemon Yellow (H.C.C. 4). Raised and shown by Mr. J. Lionel Richardson.

BOOK NOTES

"Peonies." By Arno and Irene Nehrling. 228 pp. Illus. (Hearthside Press Inc.) $3.95.

This book, which is written for the American public, contains the history and descriptions of all types of paeonies, with many fine coloured illustrations. It describes how both the herbaceous and tree paeonies should be planted, grown and looked after; there are lists of the hybrids of both the herbaceous and tree paeonies with suggestions where they should be planted in the garden, also how they can be used for floral design; how they should be cut and prepared for Shows and Educational exhibits. It is an interesting book and useful for the extensive list of the hybrids with their descriptions. The chapter on the species is short. The authors seem to think these lovely plants are difficult to grow. In England there is no difficulty in growing them, and they are valuable as garden plants, many of them coming into flower at the end of April and beginning of May. There is no mention of the finest yellow-flowered tree paeony, *P. lutea* var. *ludlowii*, discovered in Tibet by Messrs. Ludlow & Sherriff, who sent back seed in 1936. It is a magnificent plant, growing up to 6 feet high with large butter-yellow flowers held up well above the foliage and easy to grow in England in any soil. The book is full of useful information and will encourage more gardeners and garden lovers to grow these fascinating plants.

F. C. STERN

"Mist Propagation of Cuttings." By Patricia Rowe-Dutton. 135 pp. Illus. (Commonwealth Agricultural Bureaux.) 10s.

So much has been written in so many publications about the technique of raising a wide range of cuttings under mist artificially supplied by special apparatus that great credit is due to Miss Rowe-Dutton for bringing together the essentials in this very useful book. Her work will prove of great service to practical propagators and students of this particular subject and also to engineers and those concerned with the specialized apparatus which is necessary.

The practical propagator will be content to leave the intricacies of the engineering work to the specialist, but having read this book he should be in a position to pass on ideas which may result from keeping under constant review the apparatus in use with a view to improving this if possible.

The book is divided into sections which deal, in order, with Mist Control Systems, The Electronic Leaf, Mist Propagation Structures, Nozzles, Water Pressure and Quality, Rooting Media, Soil Warming, Leaching and Nutrition, Growth Substance Treatment, Diseases and Pests, Shading, Hardening-off and Establishment, Other Uses of Mist, and an account of Humidification. The comprehensive bibliography will be of great assistance to those who wish to read more deeply. Fifty-six pages are occupied by tables of results obtained by using mist, and statistics are given of over 800 different plants.

It is interesting to note that due attention has been paid to the fact that the book has been published by the Commonwealth Agricultural Bureaux because many results in the tables have been supplied from work carried out in the southern hemisphere.

F. P. KNIGHT

"Die Cactaceae." Vol. III. By Curt Backeberg. 565 pp. Illus. (Gustav Fischer, Jena, 1959.) DM. 85.

The third volume of this monograph has now been published; it deals with the South American spherical cacti, the *Austrocactinae*, here divided into 29 genera that include the well-known and popular genera *Lobivia*, *Aylostera*, *Rebutia*, *Malacocarpus*, *Notocactus*, etc. Some of the genera have been emended by the author and a number of new ones added, but this is to be expected. The group was confused and little understood when Britton and Rose published their monograph in 1919–23. Curt Backeberg has travelled widely through South America from 1935 onwards and other collectors have also availed themselves of the greater facilities for travel in this vast area in recent years. To take one case only, the genus *Lobivia* as set up by Britton and

Rose contained 23 species, some of which were transferred to other genera in the Supplement (1941) by Marshall and Bock and many new species added, most of them collected by Herr Backeberg; the number given now is 72 species with 53 varieties. One gets the impression that there may be more natural variation among these plants than has been recognized. Amongst recent collectors, F. Ritter has been active and has named a number of new plants but, unfortunately, without descriptions. His very numerous *nomina nuda* (including two genera) are listed here and, though it is not generally considered desirable to perpetuate undescribed names, it will probably be helpful to future workers to have them listed, since seed of these plants is being distributed under these names. There is evidently much work to be done still before the classification of this group is brought to completion. In this volume there are 592 monochrome illustrations, may of them of very high quality and, though the colour plates are more variable, some of them are also very fine.

VERA HIGGINS

"Drawings of British Plants. Part XIII.—Umbelliferae (2), Araliaceae, Cornaceae." By Stella Ross-Craig. Royal 8vo. (George Bell.) 9*s*. 6*d*.

This part completes Vol. IV and contains thirty plates of the very high standard which we associate with this work. Some of the *Umbelliferae* with large inflorescences must have presented particular difficulty to the botanical artist and these she has managed to portray successfully, showing both flower and seed heads.

"Deutsche Obstsorten." By H. Krummel, W. Groh and G. Friedrich. 10 vols. Illus. (Deutscher Bauernverlag, Berlin.) 14.60 DM. per vol.

The eighth issue of this work contains a greater range of fruits than its predecessors. Two peaches and two apricots are described in the same form as plums and cherries, including photographs of three aspects of the stone. They need the most favourable positions and really warm seasons to make them worth growing so are not likely to find favour with those of us in this country who are searching for hardy peaches to grow in the open. Also included are three fruits of English origin—'Conference' pear, which seems to be as successful there as here, and the apples 'Laxton's Superb' and 'Gascoyne's Scarlet', both of which disappoint by their susceptibility to disease. Two modern German apples are described, one other pear, one sour cherry and three plums of the Switchen and *P. insititia* types which can be recommended for limited planting only. Descriptions and illustrations maintain their previous standard.

J. M. S. POTTER

"Blakeslee: the Genus Datura." By Amos G. Avery, Sophie Satina and Jacob Rietsema. Foreword and Biographical Sketch by Edmund W. Sinnott. 289 pp. Illus. (Ronald Press Co., New York.)

Concentrated studies on a single genus of plants have invariably led to notable advances in both biological theory and plant breeding practice.

Progress in plant breeding is usually limited by lack of fundamental knowledge. The present book concerns itself with a survey of an enormous amount of work on the genetical, cytological, embryological and evolutionary aspects of the genus *Datura*, and deals more especially with *Datura stramonium*—a common weed.

The work was inspired by Albert Blakeslee, and this book is written by three of his collaborators. Blakeslee was able to get together a group of enthusiastic and devoted workers, first at the Station for Experimental Evolution of the Carnegie Institution of Washington at Cold Spring Harbor, and then at Smith College, where he was given a special chair of genetics at the age of sixty-five. He was thus enabled to carry on his studies for fifteen more years. Since Blakeslee was not concerned with practical results he was able to follow the trail of biological discovery wherever it led. Among his colleagues the name of John Belling deserves special mention. Belling did brilliant work in fundamental cytology and was the discoverer of the important smear technique for chromosome studies. The discovery of colchicine as a tool for doubling the chromosome number was due to the Blakeslee school. This book should be read by all serious students of cytogenetics and evolutionary theory, and by plant breeders. It ranks with Goodspeed on *Nicotiana*, Babcock on *Crepis*, and with the Trinidad School of workers on *Gossypium*.

SYDNEY HARLAND

"My Life with Roses." By Harry Wheatcroft. 224 pp. Illus. (Oldham Press Ltd.) 30*s*.

A fascinating life-story of a fascinating man. Once one begins to read the book it is difficult to leave for its pages reveal the struggles, disappointments and frustrations as well as the success of forty years in the business of growing and selling roses. The vivacious character of Harry Wheatcroft is clearly revealed in his life history as is also his many-sided interests and activities. By nature he is an individualist, in politics a Socialist, in dress incredibly gay (sometimes unsuitably so) and in the trade a first-class salesman. All these traits of character, together with his immense vitality, stand out from the pages of his *Life with Roses*.

At the same time one is impressed by the amount of valuable information on rose growing in general. It is revealing to read of the labour spent on a rose tree before it is ready to be sent to the purchaser, particularly to those who do not bud their own trees and even to these, the work entailed in labelling, sorting, packing and entry on consignment sheets before despatch is not always realized. The book gives one a feeling that the author has a deep sense of giving pleasure to others as well as making personal profit when he sells his trees.

Mr. Wheatcroft gives us a first-hand description of the mass production methods of the U.S.A. and suggests that the multi-area tests of new roses in that country might with advantage be adopted here. He should remember however that the variation in climatic and soil conditions is far far greater in the U.S.A. than in Great Britain.

Rose grower, broadcaster, amateur actor, world traveller: the book reveals the happiness which a life lived to the full can bring, especially when lived among the flowers he so deeply loves.

F. FAIRBROTHER

"Sedum of the Trans-Mexican Volcanic Belt." By Robert T. Clausen. 380 pp. Illus. (Cornell University Press). 65*s*.

A small but natural group of tender stonecrops inhabits the mountain range that runs down the centre of Mexico. Up to thirty-eight species had been described from this area, but twenty-four years of field studies as distinct from fragmentary herbarium work has enabled Dr. Clausen to reduce the number to twenty-eight, two described here for the first time. Seven other species cultivated in the area are also treated. The group is elucidated by means of four keys, distribution maps and detailed comparisons and measures of variability. A close relationship is traced with the genus *Villadia*, and some suspected hybrids analysed. It is suggested that the plant we grow as *Sedum amecamecanum* Praeg. originated as a wild hybrid between *S. dendroideum* and *Villadia batesii*. A trend in keeping with the times is towards recognising subspecies rather than many finely divided species: the well-known *Sedum praealtum* now becomes a subspecies of *S. dendroideum*.

But the scope of this work goes far beyond that of the customary taxonomic monograph. It is a study of plant evolution brought to light by statistically surveying large wild populations. As such it will be of wide teaching value, irrespective of whether *Sedum* interests you as a genus or not. As far as succulent plants are concerned, it is the ideal solution to problems of affinity and speciation which can only be made on living material. Presentation is exemplary, with index, bibliography and a gazetteer of place names.

G. D. ROWLEY

"A Herbal of All Sorts." By Geoffrey Grigson. Demy 8vo. Illus. 92 pp. (Phoenix House.) 12*s*. 6*d*.

This book contains short notes on a number of plants arranged alphabetically and deals chiefly with unusual points of old lore about drugs which can be made from them, how they may be eaten and many other details. Mr. Grigson has a most versatile and unusual knowledge of such things combined with an enquiring disposition which enables him to present unexpected ideas on many well known plants. For instance he describes how he tested William Turner's receipt of 1568 for making a glue from bluebell bulbs and how well it worked. Unfortunately there is no Index, only a few blank pages for extra notes.

PATRICK M. SYNGE

"The Russell Lupin. Its History and Cultivation." By Ronald Parrett. 8vo. 52 pp. Illus. (Holmes and Sons Ltd., 10 High Street, Andover, Hants.) 5*s*.

Undoubtedly the Russell lupins have made a great contribution to gardens in the last twenty years, during which time the author has grown these plants both from cuttings and seeds. He describes their origin and cultivation clearly, and his descriptions are amplified by the unusually good photographs by Arthur Hunt. His recommendation of his favourite varieties in each colour should prove useful to many. His suggestions for interplanting them with daffodils also sounds a good one.

The following books have been received:

"The Ladybird Book of Garden Flowers." By Brian Vesey-Fitzgerald, F.L.S. 48 pp. Illus. (Wills & Hepworth Ltd.) 2*s*. 6*d*.

"Primroses." By Roy Genders. 171 pp. Illus. (John Gifford Ltd.) 18*s*.

"Crop Protection Products Approval Scheme Approved List 1959–60." (Ministry of Agriculture, Fisheries and Food.) 64 pp.

"Tomatoes." Bulletin No. 77. (Ministry of Agriculture, Fisheries and Food.) 74 pp. Illus. 5*s*. 6*d*.

"Seedlings of Common Weeds." Bulletin No. 179. Illus. (Ministry of Agriculture, Fisheries and Food.) 4*s*. 6*d*.

"The Large Pine Weevil." (Forestry Commission Leaflet No. 1.) Illus. 11 pp. 1*s*.

"Teach Yourself Botany." By John H. Elliott. 209 pp. Illus. (English Universities Press.) 7*s*. 6*d*.

"Begonias and Fuchsias." By H. G. Witham Fogg. 91 pp. Illus. (W. & G. Foyle Ltd.) 3*s*.

"General Microbiology." By R. Y. Stanier, M. Doudoroff and E. A. Adelberg. 670 pp. Illus. (Macmillan & Co. Ltd.) 50*s*.

"Vegetables in the Open." By Keith Paisley. 47 pp. Illus. (Evans Bros. Ltd., for The National Federation of Young Farmers' Clubs.) 2*s*. 6*d*.

"Provisional Yield Tables for Oak and Beech in Great Britain." By W. T. Waters and J. M. Christie. Forestry Commission, Forest Record No. 36. 31 pp. (H.M.S.O.) 2*s*. 6*d*.

"Hardy Plants." By J. G. Vautier. Amateur Gardening Handbook No. 30. 92 pp. Illus. (W. H. & L. Collingridge Ltd.) 4*s*.

"Thirty-Eighth Annual Report of the Forestry Commissioners." 90 pp. Illus. (H.M.S.O.) 5*s*. 6*d*.

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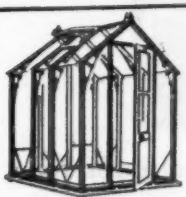

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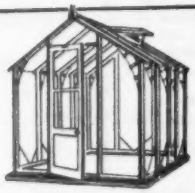

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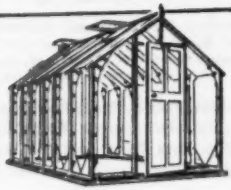

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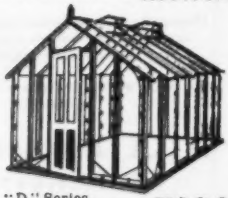

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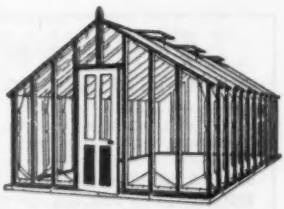

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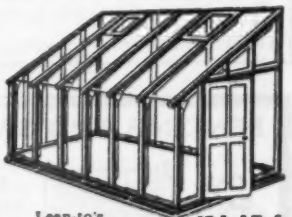

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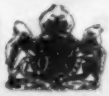

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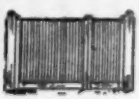

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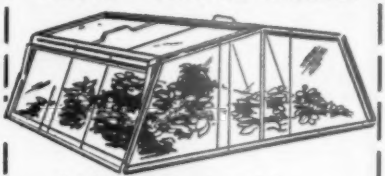

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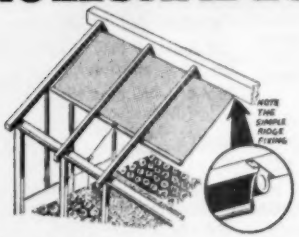

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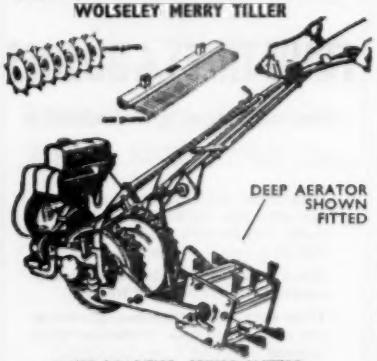

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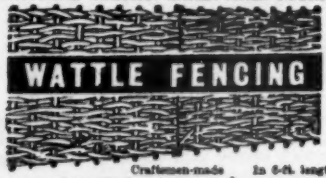

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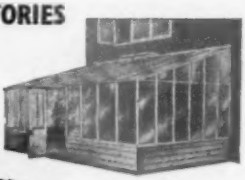

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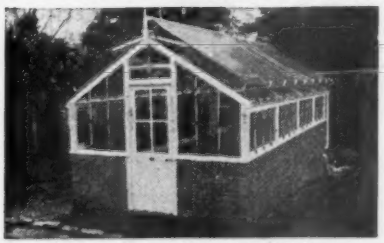

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5 ft.	35 0	40 0	45 0	50 0
6 ft.	40 0	45 0	50 0	60 0
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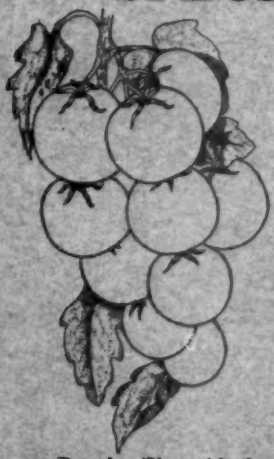

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